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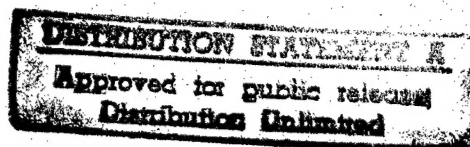
29 June 1984

USSR Report

ECONOMIC AFFAIRS

EKO: ECONOMICS AND ORGANIZATION
OF INDUSTRIAL PRODUCTION

No. 2, February 1984



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29 June 1984

USSR REPORT
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EVOLUTION OF ECONOMIC STIMULATION INDICATORS TRACED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 3-25

[Article by P. G. Bunich, corresponding member of the USSR Academy of Sciences, chief of the problem laboratory of the Academy of the National Economy under the USSR Council of Ministers (Moscow): "Economic Stimulation of High Final Results"]

[Text] The mechanism for economic stimulation of high final results of the production of state enterprises in our country has passed through a number of stages in its development. Immediately after the establishment of Soviet power the activity of these enterprises was evaluated on the basis of the volume of products produced compared to the volume of material expenditures. As a result one found the amount of net output which determined the wages and accumulation. At the same time it was necessary to fulfill planning assignments that were established from above.

During the period of military communism the enterprises covered their expenditures not from the money they earned themselves, but from the country's budget, which was given the name estimate financing. As before, the fulfillment of planned assignments was their unchanging obligation. The changeover to the NEP engendered trusts that function on the basis of autonomous financing. It continued to be mandatory to fulfill the plan.

The industrialization of the national economy brought about a serious change in the mechanism for stimulation. At that time new branches and enterprises were being created and new territories were being assimilated. In order to direct the resources to the most important goals and projects, centralized funding was expanded. All this narrowed the possibilities of granting the enterprises independence in disposing of the money they earned. The formation of a system of control with a developed centralized basis was also promoted by such factors as the relatively small scale of the economy, the largely evolutionary type of scientific and technical progress which arose on the basis of the latest material and technical base, the shortage of highly qualified management personnel, and so forth.

Although this mechanism was initially necessary, it led to certain problems. The more the sphere of centralized decisions developed, the more inevitably the economic responsibility of the enterprises was reduced to the degree of fulfillment of centralized planned assignments and the observance of planned expenditures and income established from above. The evaluation of the collectives in terms of the percentage of fulfillment of the planned assignments place in a better position those who reduced these assignments (output of products, quality and so forth) and exaggerated planned expenditures (material-intensiveness, output-capital ratio, expenditures of live labor and so forth). This weakened initiative and enterprisingness, held back scientific and technical progress, and gave rise to the desire on the part of a number of collectives to adjust plans in the direction of reduction and to increase the demands for material resources. The enterprises avoided additional assignments whose implementation was held back by various kinds of income "ceilings" and in the future would increase the plans made from the "base." The system of expenditures and results that was envisioned and legitimized by the plan was culminated with so-called expenditure prices, which technically simplified financing, but created the possibility of writing up expenditures and reduced the influence of the autonomous financing mechanism on reducing expenditures and increasing the effectiveness of management.

The country's further development led to a change in the economic situation and to the formation of new economic relations. Fundamental economic reorganizations were conducted in 1965 and 1979. In 1965 in particular there was the beginning a changeover to stronger economic levers and stimuli. This line was further developed in 1979.

But the fight against reducing directive assignments, excessive material and labor expenditures, inadequate production and planning discipline, increased wholesale prices, shortages, unplanned redistribution of resources and so forth was directed more toward halting the consequences of negative processes than toward eliminating the causes of them. Expanding the independence of the enterprises without radically reorienting them toward increasing production effectiveness sometimes weakened the flow of information to the center and ended in a return to the expansion of specific-address centralized planning. Inertia of economic thinking also played a role here.

The way the economic mechanism lagged behind modern requirements was reflected in the survival of certain tendencies. This can be judged from the combination of formally good indicators for the fulfillment of the plan and the relatively small increase in production, the declining output-capital ratio, the stable material-intensiveness, the inadequate growth rates of labor productivity, and the mediocre quality level of certain kinds of products. Thus during 9 months of 1983 the USSR Ministry of Ferrous Metallurgy fulfilled the plan by 102 percent, surpassing the fulfillment of the plan for sales of industrial products in the country as a whole (101 percent). At the same time the increase in the volume of products as compared to the same 9 months of 1982 amounted to only 4 percent (while the general industrial level was 4.1 percent). On the other hand, the Ministry of Machine Building for Light and the Food Industry fulfilled the plan by 100.8 percent with an increase of 6

percent, and for the Ministry of Machine Building for Animal Husbandry and Fodder Production these figures were 102 percent and 10 percent, respectively. Nor does the fulfillment of the plan mean that indicators of the utilization of resources are high enough. The coefficient of shift work of the stock of machine tools amounted to only 1.43, and the supplies of commodity and material values increased more rapidly than production volumes did. Production plans were fulfilled, although the plans for scientific and technical progress and the startup of new capacities were not carried out. The surplus of raw materials and the lack of self-financing exacerbated the shortage of resources, including labor resources.

Now we are discussing a need for a fundamental increase in labor productivity and radical improvement of all work for acceleration of scientific and technical progress on the basis of a profound qualitative improvement of production relations. At the June (1983) Plenum of the CPSU Central Committee Yu. V. Andropov pointed out: "In our social development we have now reached a historical point where not only has the time come, but it is inevitable that we will make profound qualitative changes in productive forces and the corresponding improvement of production relations."

The country has now entered a new stage of serious economic transformations. Large changes are being made in the economic mechanism of the agro-industrial complex by the measures envisioned by the USSR Food Program and the decree of the CPSU Central Committee and the USSR Council of Ministers, "On Improvement of Economic Interrelations Between Agriculture and Other Branches of the National Economy." An important role in strengthening the incentives for labor and the conditions for strict material responsibility is being played by the decree of the CPSU Central Committee, the USSR Council of Ministers and the AUCCTU, "On Stepping Up Work for Strengthening Socialist Labor Discipline." In 1984 a large-scale economic experiment was begun for expanding the rights of production associations (enterprises) of industry in planning and economic activity and for increasing their responsibility for the results of their work. The party proceeds from the idea that "to provide for well-arranged, uninterrupted operation of the entire economic mechanism -- this is both the need of the present day and a program task for the future."¹

The Enterprise Draws Up the Plan

In order to make the enterprises completely responsible for the final results of their operation, it is necessary to give them extensive opportunity to determine their own plan for themselves. According to the USSR Law on Labor Collectives, the drafts of long-range and current plans are submitted for approval after they have been considered by the labor collectives. The economic experiment conducted in keeping with the decree of the CPSU Central Committee and the USSR Council of Ministers for expanding the rights of production associations (enterprises) of industry envisions a considerable strengthening of their role in drawing up plans for economic and social development in all stages of planning. Here one must not lose the advantages of centralized planning or lose sight of the primacy of public advantage over local. This is why it is necessary to put important planning regulators into effect even before the enterprises draw up their plans: prices, normatives of

the effectiveness of capital investments, amortization norms, rules of calculation and so forth. In connection with the improvement of economic relations between agriculture and other branches of the national economy it has already been established that proposals for procurement prices for agricultural products and increments to them are to be submitted along with the draft of the plan. In keeping with the experiment for expanding the rights industrial enterprises, the calculations of the plan of the production collectives are preceded by centralized establishment of economic norms for wages and the incentive and development funds.

In our opinion, prices, as a rule, should be arranged in such a way that the effect from the use of the commodity is no less than the expenditures on it. Then the consumers will be satisfied and will agree to purchase it at the given price. It is even better if the effect exceeds the expenditures. In this case the cost per unit of useful effect decreases, but the sphere of sales of improved or less expensive items expands, for the old and more costly items cannot withstand the reduction in prices and their production will be curtailed. The decree of the CPSU Central Committee and the USSR Council of Ministers, "On Improving Economic Interrelations Between Agriculture and Other Branches of the National Economy," contains an instruction for determining the wholesale prices in terms of the industrial products sold to agriculture, taking into account their national economic effectiveness. It is apparently expedient to entrust the initial determination and coordination of these prices to the immediate autonomous financing partners. Then these preplanning reference prices should be refined in the system of the State Committee for Prices where they will be coordinated with the national economic interests and proportions and will acquire the proper unity.

In individual cases the prices can be less than the expenditures, for example, for children's things. In order for the producers to be motivated to produce them, the state establishes a subsidy in addition to the price, thus retaining the incentive for the producers and the responsibility of the collectives for the results. Subsidies can also be applied to the prices for exported products when the latter are more expensive than on the world market. Subsidies can also be granted to consumer enterprises so as to make it easier for them to acquire new technical equipment and so forth. Finally, it is possible to have subsidies for trade, when products for private consumption are sold at a price lower than that established by the supplier. In all cases in which subsidies are granted the state makes it incumbent on the enterprises to produce or consume the corresponding items which are included on the list of centrally planned items for output or supply.

Knowing the centralized economic regulators, the collectives begin to draw up their plans independently. They do not include disadvantageous products since the losses involved in their production have already been reimbursed through subsidies or with the help of financing benefits. Thus there is no longer any problem of "washing out" less profitable goods.

Taking into account the effect of economic regulators on the resources that are earmarked for utilization (including future investments using internal funds during the planning period, reserves, credit, budget and branch

subsidies), the enterprises calculate the intended amount of the gross output. Then it is time to reimburse expenditures and distribute income. To do this it is necessary first of all to subtract actual material expenditures from the earnings. Since the gross output is determined in prices that correspond to the effect for the consumer, these expenditures cannot be artificially increased. The consumer agrees to pay for only expenditures that are expedient, for example, inexpensive chemical substitutes, but not costly metals. Because of this the possible subsequent savings on expenditures that are reflected in increased profit can be an object for incentive without the danger that it has been increased beforehand by excessive expenditures that have been legitimized and is therefore imaginary.

The gross output minus material expenditures is the actual net output. The difficulties in calculating it caused by the need to separate material expenditures and indirect outlays are surmountable. In this connection one should note the importance of the experiment for expanding the rights of industrial enterprises which allows the possibility of applying indicators which reflect more precisely the labor expenditures and the savings on material resources.

When distributing net output (and it is gross income) it must be divided into wages and profit. This is a difficult problem. It can be solved with the help of unit (branch, group) normatives or the imposition of optimization calculations on the collectives themselves. The wage fund satisfies current needs and the accumulation fund satisfies long-range needs; today's benefits "weigh" more than tomorrow's. Therefore it is apparently necessary, in order to equalize the interest in forming these funds, to impose a higher tax rate on each ruble of wages than on each ruble of accumulation

Wages From Net Output

It is expedient to divide the wage fund that is received into the basic and additional parts. This may require a special unified (branch, group) normative which is established centrally.

The basic part of the wage fund is the source for paying tariffs (salaries). They are used to stimulate the volume of products produced and the fulfillment of normed assignments while ensuring the proper quality of the items and time periods for their production. The tariffs (salaries) take into account the skill requirements, complexity and other characteristics of the labor. Economically, one also adds to this part the bonuses that are paid in set amounts for improved product quality, savings on resources, and so forth. During the course of subsequent accounting, these bonuses are regarded as part of the tariff and are not specially singled out.

If the amounts of the basic part of the fund are sufficient to attract the necessary number of workers with payment in the amount of the tariff, each of them will receive additional tariff earnings. If the wage fund is greater, each worker will receive above-tariff income within the limits of the basic fund. By a decision of the enterprise, the stable part of above-tariff income can be translated into tariff payment for labor, which we shall call above-

normative tariff earnings. Broad differentiation is allowed in its distribution. When the conditions for such earnings no longer exist, the collective again returns to the ordinary tariff. Retaining reduced output norms in this system only increases the number of employees and reduces the earnings of each. More rapid introduction of progressive output norms will lead to a release of workers and to increased earnings of those who remain. Additionally, there is a greater need for planned job placement, more extensive centralized accounting for the needs for labor force, the development of a system of requalification, improvement of the amounts and time periods for wages during training for a new job, budget financing of the increased expenditures in the initial stage of the work in the new position, and so forth.

When there is a surplus of the basic wage fund over the sum of all tariffs, part of this surplus should be placed in reserve so that it can be utilized under circumstances when the required tariff fund turns out to be greater than the available basic fund. Then a tax is imposed either on the reserve or on its utilization. In practice, reserves are created in the opposite case: when the rates of increase of payments exceed the increase in labor productivity, that is, the reserve is formed during "difficult" times to be used during "better" times.

It is expedient to impose a progressive tax on the percentage by which the basic wage fund exceeds the tariff (normative) fund. But a tax should not be imposed on the tariff fund, for it is much more efficient to set it immediately at the level where it would be if the taxes had been withdrawn.

The tax regulates the amount by which the basic fund exceeds the tariff (normative) fund. It is included in the overall fund of above-tariff earnings and in the average wages, which are increased as a result of above-normative earnings. The advantage of the tax on the funds over the tax on the earnings consists in that in the latter case there would be a temptation to use the part of the average wages that is removed in the form of a tax for enlisting additional less skilled and lower paid workers. Without increasing the average earnings, they would facilitate the labor of those who have given them their "surplus" earnings. This would lead to a decline in labor productivity.

The removal of the aforementioned limitations from the average wages is a particular instance of a larger principle -- rejection of limitations on maximum earnings. While retaining the artificial limitations it is necessary to increase the number of workers, thus worsening the labor balance, which is bad to begin with. The maximum of wages is limited well enough by the initial tax on consumption and accumulation funds, the tax on the amount by which the basic wage fund exceeds the tariff fund, and so forth.

There is a tendency toward exceeding the leading amounts of incentives. Thus bonuses for managers, engineering and technical personnel and other specialists for the development and introduction of new technical equipment, progressive technologies and materials which correspond to the modern technical and economic level or surpass it, and also for an increased

proportion of new, highly effective products in the overall production volume can be paid for in excess of the limit amounts.² The conditions of the experiment in expanding the rights of industrial enterprises envision issuing bonuses in excess of the limit restrictions to managers, engineering and technical personnel and other specialists for expanding the list of new products and increasing exports.

If the planned sum of the basic earnings does not make it possible to pay the tariff to all personnel who have been enlisted, this is not a justification for reducing the tariff. The tariff is the law. Just as prices for purchased means of production depend on the average parameters of these means and not on their actual application, so the tariff payment should be made on the basis of the average labor of the workers of the corresponding classification group.

What is to be done if there is not enough money to pay the tariff to the necessary number of workers and production is technologically impossible without them? Then one should either use previously accumulated reserves from the wages (basic and additional) or analyze the possibilities of obtaining and repaying credit for certain measures which will increase the production efficiency in the future. It will be necessary to economize on material expenditures more persistently, to introduce labor-saving technology, and to improve the quality of the products that are produced so that the useful effect will increase more rapidly than expenditures on its production.

The thesis that one must not pay a lower tariff does not mean that there is no need to work for the tariff, that it is automatically granted to everyone who is on the staff or present during work. For those who do not fulfill the norms, do defective work by their own fault or are absent without good reason, the tariff is reduced. For example, up to two-thirds of the earnings can be withheld because of defective work. For the others the tariff is guaranteed ... if the basic wage fund has been earned.

The state increases the tariff periodically. This is a manifestation of one of the aspects of the policy for raising the standard of living of the workers. But the collectives themselves must earn the money for increasing the tariff, and they must do this by finding reserves and putting them to work.

Under normal conditions, as soon as the tariff is guaranteed it acts as a minimum norm for wages. The minimum tariff corresponds to the minimum personal income that is acceptable to the society. Therefore it seems that there is no need to introduce other minimums.

The additional wages are singled out in order to compensate for the indefiniteness of collective production results which depend largely on initiative, enterprisingness, efficiency in improving technical equipment, technology, management and so forth. During the course of the implementation of the plan the additional wages (above-normative tariff earnings are close to this) can seem higher than previously intended, but they can also be reduced to zero. As we can see, the differences between the basic and additional wages are determined by the overall level of effectiveness, and not, as

certain economists think, by the way the basic wage accounts for the quantity of labor and the additional wage, the quality.

And if the additional wage exceeds the normative percentage of the tariff (normative) fund, it forms something like a second above-tariff income. Like the first above-tariff income, it can be expediently taxed by a progressive tax, and possibly not individually, but along with it. Then the tax mechanism is simplified. Nor is its further simplification ruled out.

The additional wage also includes funds for social and cultural measures and housing construction. Part of these funds should be planned as some kind of irreducible minimum. The reserve of additional wages created through the fund for additional payment for labor must be expended when the additional wages (like the tariff earnings) are lower than the norm.³

The additional part of the wages is translated into the form of profit since this is convenient for accounting for the factor of a certain indefiniteness of the collective result. In this case the profit includes part of the wage and contains the value not only of the additional but also of the necessary product. This must be taken into account in national economic calculations in order not to overestimate the amounts of actual accumulation by raising the level of profitability.

The Mechanism for Distributing Accumulations

The fund for accumulation according to unified (branch, group) norms must be divided into two parts: that which is expended by the enterprise individually and that which is regulated centrally. The first part includes small investments intended for elimination of bottlenecks, replacement of equipment, repair and modernization, updating of the products and improvement of their quality. It is determined according to a special normative for the entire volume of accumulation and also in keeping with the limit expenditures on the individual object. It is possible to find an analogue of this for the development of production which is created at industrial enterprises where the experiment in expanding their rights is being conducted.

The second part is comprised of investments which change branch proportions, that is, those which are directed toward the construction of new enterprises and large-scale renovation of existing ones. When considering the plans for the enterprises the higher agencies analyze only the second part of the investments and make changes in their distribution if the decision, which is oriented primarily toward national economic interests, promises, as a rule, income which is greater than the sum of the plans of the enterprises. The national economic effect which is achieved this way is used to make up for losses at enterprises where incomes have decreased as a result of centralized adjustments, it is used to maintain management agencies that have made the most effective decisions, and the remainder is placed at the disposal of the society as a whole. In the Belorussian SSR Ministry of Light and the Food Industry, where unified norms have been introduced for payments from calculated profit into the state budget and at the same time firm norms have been established for the formation of the incentive funds, the calculated

profit left over after the deduction of the economic incentive funds could possibly comprise to a considerable degree that fund for centralized investments which is earned by the collectives but is distributed with the interests of the entire society in mind.

When the enterprise's own current incomes and accumulated reserve funds are not sufficient, it is expedient for them to use credit as a source of investments.⁴ This by no means contradicts the principles of self-financing since the enterprises themselves are subsequently responsible for the repayment of the credit and the payment of interest on it.

It is expedient to grant credit for investments that are below the limit from a special loan fund for noncentralized capital investments. This should be completely on a competitive basis for the most effective measures, and the interest rates should be higher. In the stage of submitting applications, credit for above-limit investments should also be considered in terms of competitive priorities. But if the centralized investments (including preliminarily considered loans) are used in the less effective spheres after they are approved, the losses are made up for with budget subsidies, reduced interest rates and prices for materials and elements that are delivered, tax breaks, increased time periods for returning the loans, advantages in the formation of import currency supplies, reduced import duties, and so forth.

The mechanism for planned self-financing includes the utilization of an amortization fund. The more of this fund that is taken from the enterprise without being returned, the greater the enterprise's claim for its return subsequently, since without this even simple reproduction is pointless. Therefore the amortization fund should apparently remain at the disposal of the enterprise. Only when old production is cut should this fund be withdrawn and promptly be used for the creation of facilities that correspond to the progressive new structure for the output of the items.

Additionally, a considerable proportion of the investments should be made on the basis of the budget or something with equal footing. These investments include funds for the development of fundamental science, the creation of complicated new technical equipment, the formation of many facilities of the infrastructure, the assimilation of new territories, accelerated advancement of the economy and culture in particular regions, large-scale geological prospecting work, the development of a material base for management of the national economy, education, public health, and so forth. It is expedient to finance these expenditures without the expectation of repayment, but if the expenditures on some of the aforementioned objects can be recouped relatively quickly, it is expedient to carry out their construction with long- or medium-term credit, whose repayment mechanism is more efficient than that of budget financing. Thus one can apparently begin to create new enterprises by financing their construction with loans which are repaid to the bank by transferring to it part of the profit which is equal to the bank interest, and contributions for renovation.

The sources of the redistributed funds are necessary in order to finance facilities of national economic, branch and plant significance. Therefore it

is correct that the experiment in expanding the rights of industrial enterprises allows their utilization at their own discretion of part of the unified fund for the development of science and technology.

When approving plans for enterprises, the higher levels make all the refinements which could not be made in the preplanning stage. The initial orientation of the collectives toward social goals and assignments is culminated with "fine tuning." The final number of centralized assignments for the utilization of capital investments and so forth can thus increase, but with the indispensable condition that centralized assignments are introduced only in cases where they are necessary to achieve a greater economic, social or other effect than can be achieved through the projects of the enterprises. The priority of the national economic approach is realized, as a rule, through unconditional adjustment of the plans of the enterprises and mandatory economic regulation which transforms what is advantageous to the society into something that is advantageous to the collectives.

The mechanism for distribution of accumulations which has been presented requires additions. Initially, their distribution does not rule out the removal of the tax for the development of the region. It must be deducted from the overall profit in order to motivate local agencies to increase the profitability of enterprises that are located on territory under the jurisdiction of the department, whose income is used to help with the construction and repair of roads, protection of the environment and so forth. If this tax is not introduced it is necessary to envision fixed percentage deductions into local budgets from centralized budget incomes, for example, from all or part of the taxes.

In addition to taxes that are deposited in the local budget, some of the accumulations can assume the form of payments to benefit higher autonomously financed systems in order to pay for their services and to form and increase centralized funds, including reserve funds. The distribution of the profit of enterprises of the extraction industry presupposes the introduction of rent payments.

The taxes imposed by the state must be coordinated both with tasks for stimulation and with the most important proportions envisioned by the national economic plan. Thus the final (after the deduction of taxes) wage funds are inseparable from the effective demand that is planned by the society, which, in turn, depends on the scale of the production of consumer goods. The final accumulations (investments) require full material support in keeping with capabilities of the investment process. Tax incomes create important financial sources for public consumption funds, the sphere of management and so forth. Taxes to benefit local budgets should correspond to their economic needs. Redistributed funds at the level of branch ministries (particularly the unified fund for the development of science and technology) and industrial associations are created so that their amounts are adequate for financing the corresponding kinds of activity. With correct coordination of taxes and transfers with national economic and branch proportions, there is no longer the problem that the funds left for local disposal may be too large or that they might be separated from material and substantial resources.

Evaluation of Enterprises' Work in Terms of Level of Production Effectiveness

Based on what has been presented one can formulate specific indicators of the level of effectiveness and the corresponding criteria for evaluating the activity of the collectives. For the main wage fund the criterion is the actual net output, and for additional private incomes and the formation of the accumulation fund at the enterprises it is the net profit, that is, the profit minus all taxes for society, rent payments, interest on loans and contributions to higher economic units. The experiment in expanding the rights of industrial enterprises is also essentially based on a two-criterion mechanism for stimulation: earnings are determined from net output (sometimes commercial), and the incentive funds -- from increased profit (sometimes increased labor productivity). Since payments into the state budget are made from calculated profit, from which one actually "takes out" the incentive funds, the second criterion is essentially transformed into the utilization of net profit.

The application of these generalizing criteria does not rule out particular criteria. The latter are necessary, in the first place, to make the generalizing indicators more detailed, and, in the second place, for evaluation when it is necessary to bring one aspect of the activity or another to the fore. Thus for newly constructed enterprises it is especially important to assimilate the capital, for capital-intensive branches -- progressively changing output-capital ratio, for material-intensive branches -- economy on proportional material expenditures, and so forth. As a rule, these indicators should be in effect along with generalizing indicators and should reflect their influence on the final result. Increased stimulation for fulfilling particular indicators is expedient only within certain limits, so as not to subvert the interest in increasing the effectiveness of other aspects of economic activity.

Both generalizing and particular indicators of effectiveness should be adjusted during a given period, taking into account their future dynamics, so that when evaluating the activity of the collectives one can take into account the inherent prospects and the average long-term effect. Additionally, it is necessary to take into account such indicators as the fulfillment of national economic and branch assignments, the rendering of assistance to other enterprises under the exchange of advanced experience, the increased content and creative nature of labor, the social climate in the collective, the level of technical safety, assistance to territorial administrative agencies, environmental protection and so forth.

One should especially consider the question of the completeness of the accounting for expenditures on products that are produced. If only part of the expenditures are considered, the net output and the net profit are artificially increased. There arises the possibility of exaggerating the effect of scientific and technical progress and the items that are produced, right up to the point where ineffective measures begin to be regarded as effective ones. Recently there has been a clearly marked tendency toward more complete accounting for production outlays. In this connection one cannot but note the justifiability of conducting the following measures:

the increased expenditures of the first 2 years of mass production of new technical equipment have not been compensated for from the unified fund for the development of science and technology, but are taken into account in the prices for this technical equipment, which are felt both by the producers and by the consumers;

payment by the stump has increased;

payments for water have been introduced;

social security payments have been increased;

amortization norms have increased.

They have also introduced the use of bank credit to pay off the debts of insolvent enterprises to supply enterprises, which prevents cost-free use of the material and monetary funds of the suppliers by defaulters.

Still, some of the expenditures are not being reflected in the production cost of the products. In order to make expenditures more precise, it is necessary in particular to make the enterprises pay for the use of public consumption funds. These payments should be calculated on the basis of the effect that is derived by the society as a result of the utilization of these funds. Thus a certain effect is produced by expenditures on education. And the society can accumulate this effect, covering socially justified outlays. F. Engels wrote: "In a society with socialist organization the expenditures (on increasing qualifications -- P. B.) are born by the society, and therefore the fruits also belong to it, that is, the greater values that are created by more complicated labor. The worker himself does not have the right to claim additional payment."⁶ But that part of the effect from education which is related to the increased attention to studies on the part of the workers themselves, the additional difficulty of skilled labor, and initiative, naturally, belong to the economic collective and its workers.

Taking into account the influence of the sphere of public health on the results of public production, it would be expedient to introduce payments for the services of this sphere, coordinating expenditures on medicine with their socio-economic effect.

It would be correct to make payments for education in proportion to the normative rate (salary) wage fund which takes into account the difference in qualifications; payments for public health could be established on the basis of the individual employee.

There is still a need to include completely in the outlays the normative effect from expenditures on geological prospecting work, to evaluate correctly imported materials and equipment and expenditures on domestic licensing if charges are introduced for this, and in all branches of the national economy to refrain from making amortization deductions to renovate objects that have been completely amortized. This list could also include to reflect in the outlays that still narrow sphere of payments directly by the enterprises for

the services of scientific research institutes that conduct applied research and so forth. On the other hand, the production cost that is calculated at the present time unjustifiably includes expenditures on the repair and construction of city roads, cultural and domestic facilities, rendering assistance to rural areas, other patronage work, and so forth.

The proposed model introduces a number of economic regulators and indicators -- a group of taxes, normatives and actual net output. At the same time it eliminates the normative net output and the tax on individual earnings, makes it unnecessary to have centralized planning of profit of enterprises, eliminates the normatives for shared distribution of profit for the needs of the society and autonomously financed complexes, and does not require the elimination of limits on numbers, including administrative and management personnel, or material expenditures and other indicators. In general the additional regulators and indicators comprise a much smaller part of the whole than did those which were eliminated. The main thing is that this reduction is not mechanical in nature, but imbues the economic mechanism with principally new features which increase the motivation of the collectives to achieve high results and accelerate scientific and technical progress and to carry out the process whereby the broad masses of workers come closer to self-control. When an enterprise is developed from its own sources, each and every individual is interested in the socio-economic results of the work, and not just the administration or workers in the economic services. The collective of the enterprise becomes like a unified brigade, in which each individual is employed in his own job and at the same time he is interested economically, through the ruble, in the best work of his colleagues and partners. Thus the individual is objectively placed in conditions that increase his role in management. Evaluation of the level of effectiveness also increases the requirements on the quality of the work of the higher levels. The enterprises will have to be compensated for losses of wages and development funds if these arise as a result of decisions made from above.

Practice is moving in the direction of incentives for the level of production effectiveness. This is shown, in the first place, by the experimentally verified changeover to the development and introduction, as a rule, of unit(branch, group) normatives for the formation of incentive funds.

Thus the experiment in expansion of the rights of industrial enterprises stipulates that the growth of their wage funds takes place on the basis of increased net (normative) output (or commercial). The experiment encompasses the Belorussian SSR Ministry of the Electrical Equipment Industry and Ministry of Light Industry, the Ukrainian SSR Ministry of the Food Industry and the Lithuanian SSR Ministry of Local Industry. A system is being tested for determining the entire wage fund according to normatives per ruble of output (Ministry of Heavy and Transport Machine Building). The material incentive fund is increased by increasing profit and reducing expenditures -- the indicator that reflects the effectiveness of production under the condition of providing as a minimum the normative reduction of the cost of a unit of useful effect. In the Belorussian SSR Ministry of the Electrical Equipment Industry, Ministry of Heavy and Transport Machine Building and Ministry of Light Industry, the funds for social and cultural measures and housing construction

increase by 2 percent for each percentage point of increase in labor productivity, and in the Ukrainian SSR Ministry of the Food Industry and the Lithuanian SSR Ministry of Local Industry -- for each percentage point of increase in profit. All these are conceived as group normatives. In the Belorussian SSR Ministry of Light Industry the normatives for payments into the state budget from the calculated profit were established singly for 1984 and 1985. The bonuses for managers of enterprises, engineering and technical personnel and other specialists are issued for tactical expansion of the products lists and increased exports.

A number of problems still need to be solved. For example, incentives granted for each percentage point of increase can give the advantage to enterprises with the greatest hidden reserves and can weaken the incentives for collectives where the maximum level of effectiveness has been reached and the possibilities of growth have been narrowed. "Guaranteeing" the base wage also reinforces the initial conditions, which are not objective in nature at all enterprises. Frequently they are subjective in nature. There are no doubts about the multitude of evaluating indicators if they are based on weighing their contribution to the final result. But the work in this area is still not complete. Group normatives are a step forward as compared to individual ones, where they are inversely proportional to the level of effectiveness. But the results of management are reflected even more precisely by direct distribution of the created value among the funds for reimbursement, consumption and accumulation.

In the second place, increased production effectiveness is stimulated with the help of increments to prices for effectiveness and quality. Fulfillment of the plan alone does not grant the right to them. In order to receive an increment it is necessary to improve the items above the planned parameters. The best example of incentives for high effectiveness is the combination of increments to prices and the refusal by higher levels to plan according to the "base." Thus the Voroshilovgrad knitting factory has earned many increments to its prices. But they were not included in the "base" of the new plan. Therefore the collective was not deprived of incentives because of past successes and its development was not retarded. As a result, it began to plan for itself increases that were three times as great as those that were calculated from what had already been achieved. The factory has reached heights which it would take 10 years to reach with planning according to the "base."

In the third place, the higher payment for increasing agricultural output over the average annual results for the preceding five-year period also stimulates increased production effectiveness. If there is increase there is additional payment; if there is no increase there is no additional payment. Evaluation of the activity of the rayon (interrayon) organizations of Sel'khoztekhnika, Sel'khozkhimiya, water management organizations and rayon "Poliv" production associations is carried out for increased agricultural output and also for reduced expenditures; for certain of the aforementioned kinds of activity one takes into account the return on expenditures, the quality of the work that is performed and so forth.

In the fourth place, awarding bonuses to management workers and specialists of agricultural enterprises for each percentage point of growth of profitability contributes to increasing the effectiveness of production.

In the fifth place, this is promoted by the formation of incentive funds at enterprises of the Ministry of Agricultural Machine Building, depending on the utilization of production capacities, economy of material expenditures, and increased labor productivity under the condition of fulfillment of the plan (but not for its fulfillment alone). Close to this policy is the experience in providing incentives for intraplant subdivisions of the Sumy production machine building association imeni M. F. Frunze, about 200 follower enterprises of the USSR Ministry of Chemical Machine Building and in Sumy Oblast, the "Kaluzhskiy turbinnyy zavod" production association, and autonomously financed brigades in various branches of the economy which have paid for the quantity of buildings that have been constructed, centers that have been created and agricultural products that have been raised and harvested, and savings of resources, and not just for the percentage of fulfillment of the plan.

To the extent that the economic mechanism of providing incentives for enterprises for the level of effectiveness basically corresponds to the mechanism for incentives at the level of the autonomously financed brigades, as it is introduced there will be a unidirectional responsive motivation of the enterprises as a whole with new autonomous financing forms developing from below. This development of autonomous financing bases in other units of the internal planning and economic system of management of associations (enterprises) will enable them to approach more consistently the provision of incentives for high final results of production. As a result, instead of attempts at a mechanical combination of various systems of incentives, there will be an overall system for providing incentives for the level of effectiveness.

Further development of the system for economic stimulation of high planned and actual autonomous financing results requires transitional measures. They include, in particular, the removal from the net output of enterprises that part which is conditioned not by current labor achievements of the collectives, but by especially advantageous conditions for their work which took form in the past, for example, the output of highly profitable goods that are in short supply. Otherwise, the enterprises that produce goods that are in short supply will end up with undeservedly large funds for wages and the development of production. In order to eliminate excessive net output one can use a stabilizing tax (like a turnover tax or a fixed payment), established for a particular period of time, or, possibly, regressive for the various years. And the enterprises with large expenditures arising from external factors over which they have no control should be temporarily given the right to take advantage of subsidies and other special benefits.

Many difficulties will have to be overcome in order to reach the optimal amounts of independently expended accumulation funds and to achieve complete commercial support for them.

A transitional period is required in order to achieve relatively complete balance of material and labor resources and the need for them. During this period extensive use will be made of methods of centralized distribution of resources with the corresponding limitation on the independence of the production collectives. A certain amount of time will also be needed to form reserve funds at all levels of management and extensive introduction of prices that take into account not only expenditures, but also the effect from the utilization of the items that have been created, and also for other important tasks.

Such are a few of the possible structures for the mechanism for incentives and increased responsibility of autonomously financed collectives for high final results. They form a system, and therefore they should be introduced and applied together. Further development of production, the introduction of experiments and their analysis will undoubtedly provide material for new refinements and developments.

FOOTNOTES

1. Andropov, Yu. V., Speech at the Plenum of the CPSU Central Committee on 15 June 1983, PRAVDA, 16 June 1983.
2. Decree of the CPSU Central Committee and the USSR Council of Ministers, "On Measures for Accelerating Scientific and Technical Progress in the National Economy," PRAVDA, 28 August 1983.
3. At the present time, formally, the tariff portion of the payment of workers in USSR industry, including the increment for the rayon coefficient and the compensation payments, accounts for 80 percent of the earnings, and bonuses -- about 20 percent. But among these bonuses the predominant ones are those for overfulfillment of norms, savings on resources, and so forth. They do not depend on the final collective result and are added to the tariff and the basic earnings. Thus the additional real, fluctuating, nonmandatory part of the payment to workers is extremely small in practice, and it is larger for engineering and technical personnel and employees.
4. As soon as the collectives form reserves of tariff and above-tariff earnings and accumulations, it will hardly be necessary to have special risk funds.
5. Another variant of contributions to higher agencies are deductions under the corresponding articles of the production cost. Probably the is the combined variant whereby material expenditures and wages that are sent to higher levels come from analogous elements of the production cost, and incentive funds come from profit.
6. Marx, K. and Engels, F., "Soch." [Works], Vol. 20, p 207.
7. The USSR Gosstandart has approved for experimental introduction a spe-

cial GOST for the administration of production associations (enterprises), including incentives for taut plans according to the Sumy method, which is to be tested until the end of the current five-year plan at 237 enterprises of 27 industrial ministries, and also at 47 enterprises which have been included in the work on their own initiative.

8. Strictly speaking, even planning in terms of the "base," under current conditions, is a unique state means of compulsory ensurance, if only of the level that has been reached. And the fact that the experiment in expanding the rights of industrial enterprises earmarks reducing the incentive funds if their plans for labor productivity are lower than the average indicators for the preceding 3 years is also a modification of planning in terms of the "base." But such planning cannot provide very much. For the enterprises still remain in control of such a means against a high "base" as a "modest" fulfillment of the plan, justification for its adjustment in the direction of reduction, and so forth.

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ESTONIAN EXPERTS DISCUSS PRODUCTION MODERNIZATION

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 26-30

[Article by V. N. Kellik, doctor of economic sciences, professor, and A. Yu. Kurkus, candidate of jurisprudence, honored inventor of the Estonian SSR, Tallinn Polytechnical Institute: "Renovation of Industry Requires a System of Measures"]

[Text] Let us begin with a consideration of the invention potential for renovating production. According to the results of 1981, inventors and efficiency experts in the Estonian SSR won first place in the all-union socialist competition for the seventh time in a row in spite of the fact that in terms of the indicators of invention activity themselves, that is, the number of applications submitted for authors' certificates and the number of certificates received per 100 workers in the republic, they are considerably behind the average indicators for the country. Success has been achieved mainly as a result of efficiency proposals. In this same year it was discovered that the number of inventors who submitted applications had decreased. Although the number of inventions that were introduced (mainly small ones which were borrowed from outside and not developed in the republic) increased greatly, the return from them in the form of total economy turned out to be 3 percent less than in 1980. This unfavorable tendency continued to deepen in 1982, when the number of inventions which were introduced decreased by almost 12 percent. The invention potential is not manifesting itself at full force because the introduction potential is lagging behind. Because of this the stockpile of developments at the enterprises themselves is not in keeping with the increased quantities of innovative ideas and laboratory developments. There are even cases where this fact has made it necessary to return to the output of models that have already been removed from production.

Of course one cannot but note the positive strides and favorable tendencies that have been in evidence in recent years. They include, in particular, the rapid development of contractual forms of cooperation between science and production and also the creation of scientific production associations. But contractual cooperation has been placed mainly in the service of immediate interests: most frequently it is used to eliminate bottlenecks. The forces of scientists are dispersed and the enterprises try to shift to others' shoulders

tasks which come under their own competence. Frequently they themselves could perform these tasks better and with less cost, and the role of the scientist could be limited to expert-consultative participation in the developments. It is no wonder that the decree of the party and government, "On Measures for Accelerating Scientific and Technical Progress in the National Economy" (1983) emphasizes the need to concentrate forces and attention primarily on solving the most important key problems.

We need a mechanism for economic responsibility for the introduction of scientific and technical achievements which will keep ahead of them. In our opinion, it could be arranged on long-range regressive norms both for labor expenditures and for the expenditure of all kinds of material resources. This means that the stricter norms will not come after the fact (after the establishment of favorable conditions), but will be planned, on the basis of the envisioned technical and organizational changes. If the time periods and the quantitative measure of the stiffening of the norms were established on a level with the contractual commitments and the higher organizations were to adhere to them strictly, the measures earmarked in the plan for modernizing production would be fulfilled successfully. Long-range interests inevitably take the upper hand over current ones.

For a reliable conjunction of current and long-range tasks, having in mind joint tasks of science and production (for the sake of its modernization), it is necessary to accelerate the development of experimental-test production (OEP) in keeping with the instructions of the aforementioned decree. But is it possible to have sufficient development of OEP without a certain reduction of series output of ordinary items, not to mention outdated ones? It seems that it is not. For the resources will have to be released from somewhere. New experimental plants (sections, shops, units) can be created realistically and quickly enough only by eliminating, as a minimum, the same or a larger number of work positions in the base plants. This presupposes a transfer of both material resources and labor force.

One is struck by the fact that we still do not have real savings on experimental production (savings on OEP) in spite of the existence of several research works in this area.* They analyze not so much the data about the real condition of OEP (its scope, expenditures, and return) as some kind of ideal schemata and models. This is explained largely by the lack of complete reporting and statistical accountability.

*See, for example: Torf, E. M., "Ekonomika i organizatsiya opytnykh proizvodstv" [Economics and Organization of Experimental Industries], Moscow, "Ekonomika," 1975; Glagoleva, G. M., "Tekhnologicheskoye osvoyeniye nauchnykh otkrytiy i razrabotok (ekonomicheskkiye aspekty)" [Technological Assimilation of Scientific Discoveries and Developments (Economic Aspects)], Moscow, "Ekonomika," 1977; "Management, Economics and Organization of Experimental Production," seminar materials, Moscow, 1977; Bashin, M. L., "Novaya tekhnika i opytnyye predpriyatiya" [New Technical Equipment and Experimental Enterprises], Moscow, "Mashinostroyeniye," 1979.

In our opinion, it is necessary to distinguish between experimental-test work which is done, on the one hand, for the supplier of a given kind of product (including the creation of pre-industrial and industrial models), and, on the other, for the consumer of the products. The latter kind of OEP is frequently associated with the need to fill the gap in series production ("experimental" elimination of the unfinished work of the suppliers) and with a normal condition of deliveries of products, it could be eliminated to a considerable degree, but in our practice it has become fairly widespread. The distinction we propose makes it possible to analyze more deeply the reserves for more effective interaction between OEP and series production.

It is neither possible nor expedient, however, for every enterprise to develop its own OEP. Sometimes it is more expedient to take advantage of the services of specialized introduction organizations. In Tallinn, for example, in the system of the Estonian SSR Ministry of Local Industry under this five-year plan the SKTB "Effekt" went into operation. It is intended to render introduction services to various clients, but its activity has not yet assumed a large scale.

The results of the efforts of innovators also depend largely on the legal support for modernization of production. Since the beginning of 1972 we have had a standard contract for the enterprises and organizations to transfer their scientific and technical achievements to other enterprises and organizations and to render assistance to them in utilizing the advanced practice which has been borrowed. It is not perfect in all respects. For example, it envisions a priori establishment of the volume of introduction. The amount of the bonus is determined according to this. In practice it is not immediately, but only in subsequent years, that the enterprises can fully develop the output of products that are manufactured on the basis of the documentation that has been acquired. But no provisions are made for recalculations. In our opinion, it would be expedient, in the same way that the author's remuneration is paid for the introduction of his invention, in this case to pay the bonuses over several years, depending on the actual economic effect that is achieved annually.

There is a fairly large number of agricultural inventions in operation in Estonia. Even though certain innovators have taken up invention work "out of misfortune" (the burning need to "patch up" the mistakes of the suppliers of technical equipment), one thing is clear: the republic's agriculture could not have reached its present level without them. The main thing, however, is something else: attempts have been made repeatedly not to direct their creativity toward particular improvements for the consumer, but to include it in the planned work of the suppliers of agricultural equipment, but nothing has come of this, of course, and nothing could have come of it. It is simply that for the plants, with the present policy, it is extremely disadvantageous to accept inventions "from outside" for assimilation. It seems to us that such policies can in no way be regarded as a normal state of affairs. We are convinced that the "rules of the game" that are in effect require a radical revision, so that the word of the consumer can indeed become decisive, and the present desire of the supplier to push his own developments with all his might will become disadvantageous for him. Preference should be given to orders for

the output of new models or on the basis of developments of the consumers themselves (taking into account their actual invention potential), or they should be guided by the parameters set by the consumer. And so the main thing is to create legal conditions whereby all existing potential for modernization could be utilized completely. Without this it will be difficult to implement the decree "On Measures for Accelerating Scientific and Technical Progress in the National Economy."

The activity of inventors cannot be limited to the country. The destiny of technical progress depends directly on patent and licensing work. So it is even more surprising that only one USSR VUZ, the Tallinn Polytechnical Institute, has managed to obtain the respected prize the "Golden Mercury" for international trade in licenses. Since the USSR provides 20 percent of the volume of world industrial products, Soviet license turnover could be considerably increased. The matter is impeded partially by the policy for remuneration. When the licensing agreement is concluded the author of the invention, usually with the first sale of the license, receives a remuneration in the maximum permissible amount and therefore he is no longer materially motivated to sell subsequent licenses. In our opinion, it would be expedient to pay the author (authors) 3 percent of the earnings from the sale of licenses, regardless of the overall sum of the remuneration paid for the utilization of inventions in the USSR, and also to envision remuneration for repeat sales of licenses.

It seems promising to use the centralized form of payment of author's remuneration which was introduced as an experiment in 1974 in the Latvian SSR and Sverdlovsk and Gorkiy oblasts. To do this, an administration for protection of the rights of inventors and centralized payment of remunerations was created under the State Committee for Inventions. Organizations and enterprises located in the Latvian SSR and Gorkiy and Sverdlovsk oblasts transfer to the administration to be used to pay remunerations 0.7 percent of the total savings achieved during the past half year from the utilization of inventions and efficiency proposals. This form makes it possible to distribute the remuneration among the developers and the enterprises that introduce the innovations more objectively and simply. Since the experiment has been in progress for a long time, in our opinion, it is time for such a form to be introduced everywhere.

Finally, a couple of words about the psychological mood of the workers. Once a group of foreign students, future engineers, visited one of the Tallinn plants. They were met by representatives of the plant's technical services. The latter were so surprised when the guests bombarded them with questions of a purely economic nature. In order to get them out of this awkward situation, it was necessary to call upon the economists for emergency assistance. Thus we were once again convinced of the need to improve the economic training of engineers and to revise the style of economic workers to correspond to the tasks of intensification of production.

For example, until recently we thought that the main effect received from the introduction of new technical equipment was the conventional (or relative) release of labor force. And most frequently we stopped when this result was

achieved. If in the first stage of intensification of production this effect actually could have more or less satisfied us, one can no longer agree to this. Now it is necessary to move from the "conventional" to the real (physical) release of labor force, that is, to an actual reduction of the number of work positions. And subsequently, instead of enticing additional labor force, the enterprises will have to offer their surplus labor resources to those units of the national economy in which the creation of new working positions is a necessity (including the OEP). Along with restructuring the economic mechanism, it will be necessary for the people to be in a frame of mind whereby they will work for all-around economy of resources.

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RESULTS OF INTRODUCTION OF BRIGADE FORMS OF LABOR ORGANIZATION

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 31-36

[Article by N. P. Markov, director of the Elektroapparaturna Plant (Gomel) and N. S. Golov, chief of the division for organization of labor and wages: "We Pay Only for Brigade Batches"]

[Text] The Gomel Elektroapparaturna Plant is one of the base enterprises of the Ministry of the Electrical Equipment Industry for introducing collective methods of organization and payment for labor. As early as 1980 we had reached the level envisioned for our plant for including workers in brigade forms (80 percent for the enterprise as a whole and 100 percent of the workers in basic production). But in the first stage of the organization of brigades we were unable to solve certain important problems. Thus the shortcomings of individual piece-rate work were not completely eliminated. While previously there were "advantageous" parts for individual workers, in the initial stage having equally advantageous work became a problem for the brigades. Moreover, the brigades bore no responsibility for the fulfillment by the shop of the plan for the products list. The shortage remained in the assembly of individual parts. The attitude of the line supervisors and the brigades toward shortage positions did not coincide. It was necessary to bring the interests of the primary labor units as close as possible to the interests of the shop and those of the entire enterprise.

To do this, at the beginning of 1980 we set the task of introducing organization and payment for labor of the brigades not simply according to the final product, but according to the final complete product. We decided to take advantage of the experience of the Kaluga Turbine Plant, adapting it to the conditions of our large-series production.

Beginning in 1978 a new indicator was established for the shops of the main production -- the commercial product, taking into account the fulfillment of the plan for the products list. Its fulfillment depends on how efficiently the system of continuous operative production planning according to the Novocherkassk method operates at the plant. The shop operative planning is based on a 24-hour batch, that is, the 24-hour need for parts manufactured by the shop in order to assemble particular types of items. The organization and payment for the labor of brigades in the basic production had to be

coordinated with the existing system of operative planning. As a basis for planning these we adopted the brigade batch -- a list of parts (billets, components) manufactured for the assembly of one item of a specific type.

On the basis of brigade batches one determines the 24-hour batch for the shop and plant. The sum of the plans of the brigades gives the plan of the shop. The sum of shop plans gives the plan of the plant. Thus each brigade is assigned a plan for commodity output taking the products list into account.

The division for labor and wages has determined comprehensive valuations for the manufacture of brigade batches. The comprehensive valuation for the part is the sum of the valuations for all operations performed by the brigade while manufacturing the part. The comprehensive valuation for the brigade batch is the sum of valuations for the batch of parts.

Then the functional services, in conjunction with public organizations, did explanatory work in the collectives of the brigades. And it was not until after this that they came to an agreement with the shop committees of the trade union and approved the provisions for payment of wages according to the final complete product. According to the provisions, only the batch of output produced in the report month is paid for. The account is kept as a running total from the beginning of the year. Parts manufactured in the report period which are not in batches are not paid for and are transferred to the next month. Products sent for packaging and accepted by the division for technical control are paid for on the assembly conveyors. In the brigades of procurement sections of the assembly shop the payment is made for the final batch of parts and components according to their technological applicability.

In 1982 the proportion of workers whose labor was paid for according to the final complete product was included among the main indicators of the socialist competition among shops, and it was also taken into account when awarding the title "Best master of a production section." These measures have increased the interest of line supervisors in innovations. During April-May 1982 all the workers of the main production facilities were changed over to payment according to the final complete product. Responsibility increased and there were no more advantageous or disadvantageous parts. The interests of the shop and brigades in fulfillment of the products list plan coincided.

The dynamics of the fulfillment of the plan by the brigades of the plastics shop can be traced from the following table.

Table. Fulfillment of the Products List Plan in the Plastics Shop Before (1981) and After (1982) the Introduction of Brigade Forms of Payment for Labor According to the Final Complete Product, %

Brigades of Press Operators	1981			1982		
	Jan	Feb	Mar	Jan	Feb	Mar
First	93.5	95.6	97.2	96.6	99.4	99.4
Second	92.0	94.0	95.0	97.5	98.7	100.0

Brigade organization has also raised a number of problems for the enterprises. The most important of them, in our opinion, is the lack of scientifically substantiated methods which make it possible to determine objectively the share of each worker in the result of the brigade's work. This problem has become especially crucial for those sections where high intensiveness of labor was achieved with piece-rate work. After the creation of the brigades some of the workers had the opinion that the brigade is an equalizer. Why do more than your comrade does if you receive the same amount? There appeared a tendency toward reduction of labor productivity.

It was necessary to find an objective and sufficiently simple method of forming the coefficient of labor participation (KTU), which would stimulate a high return from each worker. The majority of enterprises are faced with this task even now. We have taken the path of forming the KTU depending on the fulfillment of the normed assignment which is established with reference not to the leading worker nor the one who lags behind, but to the average worker. The KTU is determined as follows. For example, the shift normed assignment per one worker is 1,000 parts (operations). The first worker has made 1,000 parts, the second -- 1,100, the third -- 900 parts, and so forth.

We find the KTU by dividing the actual output by the normed assignment: the first worker = $1,000/1,000 = 1$; the second = $1,100/1,000 = 1.1$; the third = $1,000/900 = 0.9$.

The three of them earned 15 rubles. All the piece-rate wages are distributed according to the KTU. With $KTU = 1$ the piece-rate wages are $15:3 = 5$ rubles. The second worker earned $5 \times 1.1 = 5$ rubles 50 kopecks, and the third worker -- $5 \times 0.9 = 4$ rubles 50 kopecks.

The bonus is calculated for the piece-rate wages according to the provisions that are in effect at the plant. The KTU is calculated for each shift, and this work is organized so as not to take the brigade leader away from the performance of his basic functions. The foreman along with the brigade leader gives the assignment to each worker on a special form.

The foreman fills in the column "normed assignment" and the warehouseman when he receives it takes note of how many parts each worker has made. The filled-in form is submitted to the norm setter who, by dividing the number of actually manufactured parts by the normed assignment, determines the KTU. Thus the worker himself can easily determine his own KTU or check to make sure that it was calculated correctly. The average monthly KTU is determined by dividing the sum of the shift KTU's for the month by the number of shifts that have been worked.

Thanks to this method it has been possible to retain the achievements of the best workers and dispel their doubts about being lost in the brigade. Those who fall behind have also understood that they cannot hide behind the leading workers. This method precludes justified complaints because the KTU is calculated and the report is made daily so that it can easily be verified.

We should like to emphasize once again that we pay only for products that have been submitted in a batch, that is, the brigade batch. And even when distributing individual earnings we use the coefficient of labor participation.

The basis for determining the number of brigade batches manufactured during a month and the payment for them is the reference list which is signed by the foreman of the shop dispatcher group and approved by the shop chief. It is compiled from data from on-the-spot accounting, is appended to the brigade contract, and is submitted to the calculation group of the bookkeeping office.

In our opinion, brigade payment for labor according to the final complete product with the distribution of earnings according to the individual level of fulfillment of normed assignments is best. Since 1981 the plant has been regularly fulfilling the plan, and above all the one for sales, taking into account the fulfillment of contractual commitments for deliveries. It operates rhythmically (the coefficient of 10-day rhythm is 1). There has been a sharp reduction of the number of workers who do not fulfill the output norms. While in 1975, after the introduction of the new conditions for wages in machine building, 129 people failed to fulfill the norms, in 1981 only 10 did.

At the present time 83 percent of the workers are included in the brigade form of organization and payment for labor according to the final results, while the assignment for the end of the five-year plan was for 84 percent. Thus this form of organization has become the decisive one for our plant.

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WAYS OF IMPROVING PRODUCT QUALITY EXAMINED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 37-44

[Article by O. V. Kuratov, candidate of technical sciences (Moscow):
"Approaching Product Quality Planning Realistically"]

[Test] The decree of the CPSU Central Committee and the USSR Council of Ministers of 12 July 1979 on improving the economic mechanism envisions as one of the main indicators "increased output of products of the highest quality category or other indicator of product quality that has been established for the given branch." Thus it is oriented not only toward the existing method of evaluation and planning of product quality, but also toward the search for new, more effective systems of indicators.

The need to raise the level of planning of product quality is obvious, but when developing the technical policy for a specific enterprise, the direction of work which is of key significance, namely the correspondence of the products that are produced to design documentation (KD), is far from always the main one. Even in official recommendations this direction is not singled out as the initial one.

Many specialists, relying on the idea the correspondence of products to the KD is something to be taken for granted, bypass this aspect of the problem and thus they start out with false initial positions. As a result, on the sales market there are products which not only have deviations with respect to individual parameters, but in general are incapable of being used. The consumers sustain significant material losses, and the "point of reading" from which the demand for the next generation of these products is formed becomes diffused and vague.

But for experienced production organizers, the output of products completely in keeping with the KD is always one of the most difficult tasks, which demands constant attention and considerable expenditures of time, energy and administrative talent.

Not to Close One's Eyes to Defective Products

The concrete indicators of product quality should be closely related to indicators of labor expenditures. Consequently, it is impossible not to take into account the ratio between the good products that are sold and the total labor-intensiveness for the manufacture of both good and defective products. Such an approach forces us to look at the problem of defective work in a new way.

On official forms for planning and accountability, defective work is practically ignored, and thus there is no possibility of accounting for expenditures on defective products, including the damage to materials and batching items and labor expenditures.

But defective work exists independently of forms of report and planning documents, and one must not close one's eyes to this. It is determined by objective factors, and one can try to name them.

1. Implements of labor, technology and products that are produced are rapidly becoming more complicated.
2. Significant labor expenditures are required to master new methods of working with the products that are being assimilated.
3. As new products are assimilated, economic services plan increased output norms at a deliberately predetermined rate, which, however, is not always supported by the technical measures or the skills of the workers.
4. The design documentation itself is being changed in order to eliminate mistakes made in its development, and also for the sake of further improvement of the consumer qualities of the products.
5. There are extreme differences in the degrees of participation of the developers in the organization of series production of new products.
6. The properties (parameters) of materials (batching elements) and the condition of deliveries fluctuate considerably.
7. Personnel are regularly replaced. New workers, especially young ones, frequently do not have the necessary practical skills.
8. Sources of energy can be unexpectedly cut off, technological equipment can break down and so forth.

Taking the aforementioned factors into account and also utilizing the mechanism of socialist planning, one can evaluate the true amounts of losses from defective work and envision measures for reducing them. The reliability of the report structure for production cost increases because of this. The evaluation of the results of the activity of the shop (enterprise, branch) becomes more objective. Conversely, the present concealment of expenditures on defective work leads to uncontrolled increase of production cost (and,

consequently, also of the wholesale prices of the products), and also to an appreciable distortion of its true structure.

The Dynamic Nature of Product Quality

The factors in defective work considered above can be divided according to the time indicator into two main groups: transient (1-4) and permanently in effect (5-9). This approach makes it possible to conclude that the formation of product quality should be some kind of transition from the level that existed at the beginning of the assimilation of the product to another level which is reached on the basis of certain patterns.

The ratio between the number of cases of defective products and the overall number of requests for them during a particular period (for example, during a month or quarter) differs for various items, but there is a quite definite pattern of emergence of product quality. Thus in the production of new instrument building and precision machine building products, one can clearly single out the following stages.

The stage of assimilation. The best forces of the plant, developers and quality control agencies are always in the shops. They solve all problems on the spot, beginning with changes in the KD and ending with training the workers and supervisors. A small number of the most qualified personnel prepare the first models of products that are to be series produced. Experimental output norms are in effect in the shops. Control of the items, their constituent parts, materials and batching items is carried out with the participation of the developers and the plant's technical services. Divergences that are discovered are immediately reflected in the documentation or are eliminated through authorized adjustments. This stage ends with the output of the adjustment batch.

The first stage of manufacture. The certificate of successful completion of the adjustment batch has been signed. The best KD developers and technologists leave the shops. Workers who have had theoretical training but do not have sufficient practical skills are enlisted for the manufacture of the products. All possible kinds of defective work appear. New shortcomings in the KD can be discovered. The previously planned increase in output norms begins to go into effect. The psychological microclimate is characterized by increasing tension. Defective work begins to increase.

The second stage of manufacture. Because of the increased amount of defective work the plant management again mobilizes the developers and the best workers of the enterprise to solve the problems that have arisen. Systematic data about defects are analyzed on the spot and effective measures are developed to improve the KD. The workers gradually acquire the necessary specific skills. The rates of increase in output norms increasingly correspond to the rates of introduction of technical measures. At first the amount of defective work stops increasing, and then it begins to decrease, gradually approaching the level of the adjustment batch.

The third stage of output. By the time it begins practically all the possible (and economically expedient) schematic design, technological and organizational decisions have been made. The level of defective work has been reduced to a the minimum determined by factors 5-9 (labor turnover, changes in the properties of materials and batching items, the psychological condition of the workers and so forth).

The Dynamics of Production Cost and Profit

The deep common areas between precision machine building and instrument building (common administrative macrostructures, the same algorithms of development, assimilation and series production, identical methods and means of technical progress) predetermine the common dynamics of value characteristics of the products of these branches.

Changes in the value characteristics of the industrial output (price, production cost, profit) can be classified in two areas. The first includes changes in the period of assimilation, and the second -- in the period of adjusted production. The first kind is characterized by dynamic changes in production cost and profit, and a dramatic drop in the price (at the time of changeover from the temporary wholesale price to the permanent one). The second kind typically has less sharp value fluctuations.

The methods that are in effect envision a dramatic change in the price upon completion of the period of assimilation of the product. For example, the product can be delivered on the last day of one month at a price that is considerably higher than the one for the first day of the next month. It is assumed that by the time of this dramatic change the production cost has already reached the level which provides for profitability of the product with the new, appreciably lower price.

This is confirmed by an investigation we conducted in precision machine building and instrument building products that were produced under the 10th Five-Year Plan. We analyzed the formation of the value characteristics of multichannel instruments, therapeutic equipment and sets of radiation therapy equipment, defectoscopes, computer processors and so forth. The selection of the products was made on the basis of a system of intercoordinated criteria which provide not only for broad technical and economic productivity of the selection, but also for correctness of the distribution of its properties among precision machine building and instrument building products during the next decade.

What are these criteria?

A high technical level. We selected items which manifested the results of the latest achievements of precision mechanics, physics and other sciences.

Representation:

a) economic (in the selection we consider products from three union ministries and 15 series production enterprises);

b) technological (the manufacture of products using the maximum possible range of forward-looking technological processes);

c) value characteristics (we consider products with wholesale prices from several hundred to 1.5 million rubles and with various proportions of normative net output with various items);

d) regional (manufacturing plants were taken from the center of the European part of the country, the Urals, Western Siberia, and the Ukrainian and Estonian union republics).

In all of the calculations the length of the period of assimilation was taken to be equal to the actual amount of time during which the temporary wholesale price was in effect.

The generalization of the data from the investigation showed that during the period of assimilation the production cost drops by an average of 35 percent, and the permanent wholesale price is established at the end of this period at an average of 30 percent less than the temporary price. Hence the above-normative increase in profit. The average percentage of profit from the sale of a unit of output at the temporary wholesale price is 37 percent, that is, it exceeds the profit norm (12-15 percent) for the branches under consideration 2.5-3-fold.

The least expensive items, naturally, were based on the simplest schematic-design and technological decisions, which make it possible to reduce defective work and labor-intensiveness and to achieve the maximum profit within extremely short periods of time. And expensive items have a higher proportion of direct material expenditures, which limits the average percentage of profit.

The evolution of the production cost and the profit influences the economic policy of the enterprises in the area of price setting. In trying to increase the overall amount of profit, they strive to:

a) maximally increase the initial amount of profit in order to establish the maximum temporary wholesale price;

b) establish the maximum period of effect of this price (2 years) in order to increase the amount of profit in the second period of assimilation.

In order to achieve these goals, the enterprises achieve, in the first place, an increase of the norms for the expenditure of materials and batching items (with a mandatory reserve), and in the second place, the initial norms of labor expenditures for the manufacture of the product and fittings (and their repair).

Generally speaking, the enterprise is interested in making sure that the production cost drops rapidly enough during the period of assimilation. But if as a result of an agreement a higher temporary wholesale price has been established, this is no longer the primary interest. Moreover, if the profit

increases too rapidly there is the danger that the controlling financial agencies will demand that the prices be revised ahead of schedule. In this case (and it is not at all hypothetical) a certain percentage of defective work turns out to be advantageous.

From the standpoint of state interests, in the stage of assimilation the quantity of defective products and the level of the production cost should be reduced, and, consequently, also the amount of the temporary wholesale price.

In the stage of adjusted production, the planning of product quality should take into account the inevitability of a certain level of defective work. At the same time, having fixed the value of this level, one can plan to reduce it.

If one approaches this realistically and determines the level of defective work carefully, it is possible to represent accurately the true structure of the production cost. Strict accounting for labor expenditures on defective work is especially important when changing over to the indicator of the normative net output. It is calculated as the sum of labor expenditures on the final defective work and the repair of the defective products.

On the basis of this approach one can recommend such an indicator of product quality for the period of adjusted production as the effectiveness of labor expenditures (ratio between labor expenditures on defective work and the total labor expenditures on the output of the items during the given period).

The system of indicators of product quality should also contain other quality indicators which have become traditional (technological discipline, percentage of acceptance of items with the first request and so forth). When the indicator of the effectiveness of labor expenditures is introduced, all of them acquire a clear economic meaning and form a complex with a single goal.

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INTRODUCTION OF SCIENTIFIC AND TECHNICAL ACHIEVEMENTS DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 44-45

[Introduction to articles that follow: "Once Again About Introduction"]

[Text] In order to implement the measures earmarked by the 26th CPSU Congress and the June (1983) Plenum of the CPSU Central Committee for providing for further acceleration of scientific and technical progress, in August 1983 the CPSU Central Committee and the USSR Council of Ministers adopted a decree which envisions further expansion and deepening of interbranch specialization and cooperation in production; strengthening and development of the test-production and experimental base of enterprises, scientific research institutions, and research and planning-design organizations; and improvement of material incentives for direct participants in the creation and industrial assimilation of new technical equipment, technology and materials. The decree has also earmarked a complex of measures for increasing the responsibility of collectives of associations, enterprises, ministries, departments and their managers for accelerating the introduction of the achievements of science and technology into the national economy.

Attaching a great deal of significance to the problem of introducing innovations, the country's scientists and production workers are conducting a broad search of ways of solving it. The articles presented for your attention are being published in the form of a discussion since not all of the ideas presented in them are unquestionable. The article by G. A. Lakhtin, doctor of economic sciences, describes a method of introducing inventions which is of special national economic significance. The lawyer V. P. Rassokhin analyzes a negative influence which is sometimes exerted by the departmental structure of management on the introduction of the achievements of science and technology. I. S. Dreytser, using the example of the history of the branch institutes of the Kuzbass, argues the need to create powerful experimental bases whose only task would be introduction. I. A. Sadchikov and V. N. Peresun'ko address the pressing problem of the distribution of the effect from innovations. I. G. Kuchmazokov makes a concrete suggestion about the policy for providing incentives for inventors and efficiency experts.

The problem is so important and has so many levels that we are returning to a discussion of it once again.

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PRIORITIES TO BE ESTABLISHED FOR TECHNICAL INNOVATIONS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 46-53

[Article by G. A. Lakhtin, doctor of economic sciences, Institute of Economics of the USSR Academy of Sciences (Moscow): "Priority -- To Significant Technical Innovations"]

[Text] The society needs both revolutionary technical transformations and evolutionary squeezing out of existing technical equipment everything that it can give. One should maintain an optimal ratio between these two directions of scientific and technical development.

Since scientific and technical development is becoming the basis for overall economic and social progress, it is inevitably of paramount importance to have an accelerated influx of large-scale innovations that revolutionize production. With respect to invention work, this means that there is a need to shift the balance in the direction of increasing the proportion of inventions that are of great national economic significance.

But the existing mechanism for management of invention activity does not fully correspond to the solution to this problem. It is based on a quantitative approach, and the main accounting and control indicators is the number of inventions; within the framework of the overall number, all inventions are equally important. One takes into account, for example, how many workers there are per one invention; but such an indicator characterizes only the quantity, but not the effectiveness.

Obviously, the solution to the general problem that has been noted requires ascribing paramount importance not to quantity, but to quality, and taking a differentiated approach: for especially large-scale inventions one must develop a separate organizational mechanism which includes not only individual accounting, especially favorable conditions for incentives and so forth, but also the creation of a special state administrative agency which is in charge of realizing such inventions. But for such a decisive measure it is necessary to have a legal basis which rests on the possibility of separating inventions that are of great significance from the basic mass of minor ones.

Even now we distinguish large and small inventions, pioneering and supplementary ones, but this is done without established rules, subjectively, and it does not have the goal of creating a separate policy for any category. It is necessary to establish for inventions of great significance distinctions which could become the legal norm, and the singling out of inventions of great significance would be a legal act which would serve to give these inventions a special status. To do this, in turn, it is necessary to give an interpretation to the concept of "significance," and it must be one which would make significance a normative legal category.

Soviet invention law performs two functions: it defends the interests of the state in realizing new technical decisions and it protects the interests of the inventors in their moral (recognition of priority) and material aspects. A centralized interdepartmental mechanism has been created for everything that is related to inventors' rights. But there is no single mechanism for the first of the aforementioned functions. The State Committee for Inventions and Discoveries has the authority to recognize a claim as an invention, but its further progress is in the hands of branch ministries. There is an obvious need for a unified chain of actions and, consequently, for a state agency which controls the realization of inventions. But something else is also obvious: this agency should handle not all inventions, but only the most significant ones.

Significance and Technical-Economic Level

Delimitation according to significance is complicated by the vagueness of this concept. "Orientation toward the future" is also an imprecise phrase which indicates only the useful effect in the future. Similarly, "progressiveness" indicates a rise in the technical level, but it does not exhaust the idea of the contribution to the national economy which the invention will make. For lack of anything better, we use the term "significance." This concept is associated with a large-scale national economic result. Obviously, achieving such a result depends, in the first place, on the position occupied by the object of the invention in the overall technical system -- we expect from the appearance of a new set of equipment or complex of technical means a greater return than we do from the invention of an individual component or part.

But a part of a technical device can turn out to be a large invention too if it is used on a large scale. Hence the second criterion -- extensiveness of dissemination.

In the third place, the significance of an invention or technical development depends on the amount of technical progress that is achieved. If one imagines overall technical progress as a directed flow comprised of large and small forward steps, the size of an individual step will undoubtedly characterize the significance of the invention that made it possible. The measure of this characteristic can be established in two ways: from the previous level (prototype) and in comparison with the standard (world level). In the former case the measure is the economic effect, and in the latter -- the technical and economic level.

According to the present methods, the calculation of the economic effect from the introduction of an invention is based on the difference in the expenditures between the base (replaced technical equipment or technology) and the introduced technical decision.* The economic effect as a criterion is thrown into past and it comes up against yesterday's technology, showing how far the invented method or product has come from it. In the calculation formula the proportional difference in the expenditures (effect per unit of output) is multiplied by the volume of introduction (number of units). The overall amount of the effect turns out to be dependent not only on the technical progress, but also on the volumes. Therefore there can be a great effect even with small improvements: improvement of existing technical equipment (of an evolutionary nature) can produce an immense effect if this technical equipment has mass application. So a great effect in and of itself does not indicate the appearance of a radical change in technical equipment.

The course toward intensification adopted by the 26th CPSU Congress brings to the fore the requirements on the level of technical equipment that is created and the qualitative side of production. "Correspondence to the best world and domestic models -- we cannot and should not agree to anything less."** A primary criterion for evaluating inventions should be whether or not they provide for reaching the world level or at least approaching it. As was noted in the article by the deputy chairman of the State Committee for Inventions and Discoveries, V. V. Bykov, "it is necessary to concentrate attention on the technical level of decisions that are recognized as inventions."*** In our opinion, it is precisely this criterion that is decisive for singling out inventions that are of great significance.

How to Evaluate the Technical and Economic Level

But there is no officially established methodology for determining the technical and economic level (as distinct from the economic effect). One might assume that the need to control scientific and technical progress, including invention, will lead to the creation of such a methodology. It seems that it should be based on the following principles. For each class of items one can single out a number of parameters (consumer qualities) which make these items socially useful. If this list is based on the best values,

* "Metodika (osnovnyye polozheniya) opredeleniya ekonomicheskoy effektivnosti ispol'zovaniya v narodnom khozyaystve novoy tekhniki, izobreteniy i ratsionalizatorskikh predlozheniy" [Methods (Basic Provisions) for Determining the Economic Effectiveness of the Utilization in the National Economy of New Technical Equipment, Inventions and Efficiency Proposals], Moscow, "Ekonomika", 1977.

** "Materialy XXVI s"yezda KPSS" [Materials of the 26th CPSU Congress], Moscow, Politizdat, 1981, p 43.

*** Bykov, V. V., "Problems of Improving Legal Regulation of Invention Work," VOPROSY IZOBRETATEL'STVA, 1980, No 8, p 6.

-- using data concerning the highest achievements or calculations of what would be optimal for our national economy, we would receive a quantitative description of a high technical level. It should serve as the standard. Comparing the existing value with the standard value in terms of this parameter provides a relative amount which shows how our technical equipment compares to the highest world level in terms of this parameter. The product of these amounts gives an overall evaluation of the existing technical level in nondimensional index form. The figure 1 signifies a correspondence to the world level and a fraction characterizes a lag behind it. If the data make it possible to make such a comparison in terms of production outlays and the standard (best) amount, it becomes possible to change over from the technical to the technical-economic level. As opposed to the economic effect, the technical-economic level as a criterion is directed toward the future and envisions comparisons with technical equipment of tomorrow.

And so it is suggested that the significance of inventions be evaluated in terms of four criteria, for each of which one can preliminarily determine an evaluation scale consisting of several gradations.

The class of system complexity means the position of the object of the invention in the hierarchy of technical equipment. Gradations of this criterion can be established only for distinguishing the main classes of inventions:

Point	Method	Device
1	Unit technological device	Part
2	Technological operation	Component
3	Technological process	Unit technical means (machine, apparatus)
4	Production (technological system)	Technical system (aggregate, complex of technical means)

When it comes to substance, another approach is needed. In a certain sense it is a system since it can be divided without losing its properties. This approach consists in delimiting the areas of application of the invention substance: 1 -- makes it possible to carry out a technological method (for example soldering) or create a part (plastic for bushing); 2 -- makes it possible to perform a technological operation (extractant) or create a component of a technical device, and so forth.

Extensiveness of dissemination: 1-- it is assumed that it will be applied in a separate production section; 2-- application on the scale of the enterprise or group of industries of the same profile; 3-- application of the scale of the branch; 4-- application on the scale of a number of branches.

Economic effect: 1-- up to 10,000 rubles; 2-- up to 100,000 rubles; 3-- up to 1 million rubles; 4-- more than 1 million rubles.

Technical-economic level. Before approving the methods for determining the technical-economic level in quantitative terms, one can try to utilize a simplified point scale: 1-- lower than the highest world level in terms of all parameters; 2-- reaches the highest world level in terms of basic parameters, but falls short of it in terms of secondary ones; 3-- reaches the highest world level in terms of technical parameters, but falls short of it in terms of production outlays; 4-- corresponds to the highest level or surpasses it.

All that was said above pertains to objects for production purposes. But the object of an invention can also be a device or substance that is intended for private consumption (household appliances, household chemicals, and so forth). The concept of significance is also applicable to such inventions, and, obviously, the task of singling out those with great significance is equally important. The principle for singling them out is the same, but the criteria are somewhat different. The criterion of the economic effect falls away, and the criterion of extensiveness of dissemination assumes different gradations, for example: 1-- satisfies the changing need of an individual group of people (ski wax); 2-- satisfies the constant need of an individual group of people (eye glasses); 3-- satisfies a general need that arises periodically (medicines); 4-- satisfies a constant general need (detergents).

It is still necessary to determine the lowest evaluations with which the invention will be regarded as being of great significance.

The proposed method of evaluating significance was approved using a group of inventions which were included in the plan for utilization by one of the ministries in 1981. After the individual point evaluations were multiplied, 2 of the 11 inventions were given ratings of 6-8; 8 of the inventions were characterized by ratings of about 36-48; and only for one of them did the multiplication of the points amount to 144 (that is, for two of the factors the rating was 3 points and for two of them it was 4 points). This invention has no prototypes, it surpasses the world level, and it produces an economic effect of more than 1 million rubles. Although in this case the outstanding one of the overall series of inventions was obvious, this example was chosen in order to show the sensitivity of the proposed method to differences in significance. In general it is not so obvious, and the transition from verbal definitions (important invention, trivial invention) to quantitative characteristics opens up the road to objectivization of the singling out of inventions with great significance into a separate class.

In another case the methods were tested using the example of the subject matter for branch institutes. From the subject matter plans of five institutes of different branches they selected (in keeping with the expert evaluations of specialists): a) subjects which involved the development of principally new technology for which there were no prototypes (pioneering); b) developments carried out on the level of large investments; c) developments carried out on the level of inventions which were not rated as large-scale.

One can assume that in the given stage it is not the methodological details that are important, but the establishment in principle of the possibility of evaluating such a characteristic as national economic significance, and thus constructing a base for transforming this characteristic into a normative indicator which can be used in controlling scientific and technical progress -- in planning, accounting, control and material incentives for inventors, when selecting subject matter, certifying the work that has been performed and so forth. Since the significance of inventions and technical developments is subject to quantitative (point) evaluation, one can move from many years of discussions to action and create a mechanism to strongly stimulate large-scale innovations that revolutionize production.

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LEGAL ASPECTS OF INNOVATION WORK CLARIFIED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 53-66

[Article by V. P. Rassokhin, candidate of jurisprudence, Institute of State and Law of the USSR Academy of Sciences (Moscow): "Innovations, Departments and the Law"]

[Text] Until recently the earth dams of the GES's, including those in canyons of mountain rivers, have been constructed by the traditional method -- earth from the mines, frequently located tens of kilometers away, has been shipped in in dump trucks. To do this they build roads, build tunnels in the steep sides of the canyons, then the earth delivered to the dam is packed down with heavy rollers, and so forth. All this requires a large number of workers and machines, and immense expenditures. This is precisely why the construction of large dams takes so many long years.

Several years ago the engineer N. V. Agureyev suggested a principally new technology for building dams. Its essence consisted of two main aspects: continuous delivery of earth to the side of the canyon from the mines along a chain of conveyors, and then, the main thing, dumping this earth from a great height directly into the body of the dam, which provides the necessary density of packing because of the kinetic energy and the weight of the earth that is dumped. Agureyev's idea turned out to be so promising that the USSR State Committee for Science and Technology included the development of the new technology in one of its 200 most important scientific and technical programs for 1976-1980 and the USSR minister of power and electrification issued an order concerning the construction of an experimental-industrial testing ground at the Nurekskaya GES, and then at the Rogunskaya dam on the Vakhsh River as well.

But not a single testing ground was constructed under the last five-year plan: a powerful head institute came out against N. V. Agureyev's idea. It came out against it in spite of the program that was approved and the order from its minister. At first glance it seemed that certain leading workers of the institute were being held captive by "conservatism." But what comes next here is very curious. When Agureyev first suggested transporting the earth from the mines to the dam not by dump trucks but by conveyors and packing it down

not with rollers but by dumping it from high above, people in the institute simply laughed at him. But now conveyor transport of earth has been recognized by the institute itself as extremely promising and it has even been included in the arsenal of means of constructing the Rogunskaya dam. True, the list of authors does not include ... Agureyev's name. Moreover, workers of the institute now believe that it was Agureyev who stole their idea. Will the same thing not happen with the idea of dumping the earth from high above? It has already been reported in a number of articles in branch journals. And, strange as it may be, these articles have been written by workers of the head institute*

In fact there is nothing strange in this story. All the "conservatism" here amounts to well-thought-out attempts to separate a great idea from its author. This is a typical situation in the relations between the head institute of the branch department and outside inventors, scientists or even entire academic institutes.

More than 20 years ago I first heard about a brilliant invention which had been developed in the Institute of Chemical Physics of the USSR Academy of Sciences -- a principally new method of ignition in internal combustion carburetor engines. For 20 years a heavy battle revolved around this invention (which could have produced an immense savings of valuable fuel during these 20 years and made the air of our cities much cleaner). On one side were the president of the USSR Academy of Sciences, Mstislav Vsevolodovich Keldysh, the chairmen of the state committees for science and technology and for inventions and discoveries, and the most eminent scientists of the country. On the other side were two head institutes of the automotive and tractor industries. For 20 years their resistance could not be broken!

There are many examples like this in the central press.

And so the head institute sometimes does not need heads "from the outside," regardless of what they may think up. But the society cannot put up with this. It has the right to raise the question this way: perhaps that very scientific and technical revolution, about which so many words have been uttered, does not need "head" institutes?..

Bertrand Russell once noted sadly that the mistakes and weakness of the new are always more noticeable than the clear absurdities that have become traditional. The privileged position of the head institute of the production branch has now become customary and is taken for granted, while in fact it is the last stage on the path of scientific and technical progress. And indeed how can one imagine our national economy not being in the grip of a tight network of head institutes, and the introduction of the achievements of science and technology not being under the control of this network?

But now let us recall: was such a situation typical for those very highly developed special branches in which the country achieved the greatest successes even during the most difficult years of the Great Patriotic War?

*See SOTSIALISTICHESKAYA INDUSTRIYA, 29 August 1979

Was it really an accident, for example, that in the aviation industry, instead of any one head design bureau, there was the strongest, sometimes dramatic, competition among design bureaus, each of which was following its own path?

Let us raise the main question here: where did they, the present-day design bureaus, get this incredible power?

What is Concealed in the Genetic Code of the Departmental Structure?

For so many years we have read and heard the same thing about the introduction of inventions: "Weak experimental base. It is necessary to create experimental subdivisions both at the plants and at the large scientific research institutes. The enterprises have no motivation, it is necessary to strengthen material incentives ..." It has been as though the same record has been spinning around for 20 years, and it has been stuck in the same place.

But let us ask ourselves a question: is it really necessary to construct new experimental bases, since the ones we have are completely loaded with series-produced products, which are sometimes outdated? And then: do the ministries really not have any possibility of considerably increasing the incentives for plant collectives to introduce large inventions? Such possibilities exist, but they are used for other purposes, which are more important to the departmental structure.

Long study of the problem convinces us: both the monopolism of the head institutes and the strange need for experimental bases, whose capacities can be used however they please as long as it is for the development of new technical equipment, and the clear lack of motivation for departments to "strengthen the incentives for acceleration of introduction" have a common cause, which is concealed, as it were, in the genetic code of the departmental structure. By the latter we mean the closed administrative-management system which the department forms along with the enterprises and institutions that belong to it -- a system which includes the producer branch and which, based on its own internal interests, strives primarily for self-aggrandizement and the greatest possible independence of other systems. One of the main peculiarities of this system is the orientation primarily toward meeting indicators, and not toward the achievement of real results.

... The corrosion of metal is one of the important national economic problems. Special protective coatings have been created, as have sets of equipment for applying them to rolled steel directly during the process of its production. The Ministry of Ferrous Metallurgy has been allotted generous resources for mass introduction of these achievements of science, which have been brought up to complete industrial readiness and have been applied successfully at certain plants. But extensive introduction was halted for the sake of "their own" indicators. The reason was explained with unexpected frankness in the newspaper SOTSIALISTICHESKAYA INDUSTRIYA by the chief of the technical administration of the Ministry of Ferrous metallurgy (now retired): "What is the point in the plants and combines introducing costly equipment which would only reprocess rolled metal that has already been obtained? ... After all, this would mean recasting prepared products and reducing indicators without

receiving a return in tons from the capital investments." The newspaper was amazed: "Is this really all there is to the logic which is allowing millions of tons of rolled metal and pipes to rust? ... Is it really for the sake of 'their own' indicators that state interests are pushed into the background?"*

Yet there is no cause to be amazed about this. If one tries to transform the branch department into some kind of center for a closed administrative-management system which is concerned primarily about "its own" indicators, its interests frequently do not coincide with the interests of the national economy as a whole.

At the June (1983) Plenum of the CPSU Central Committee it was pointed out that in the Soviet society, as in any other social organism, there is a struggle between the new and the old, and not only creative, but also negative tendencies are in operation. These include, for example, giving priority to local and departmental interests, bureaucratism and conservatism. It is necessary to reveal the reasons for these and other such phenomena and find ways of overcoming them.

In order to manufacture machines for northern use which are extremely needed in Siberia, it is necessary to arrange mass output of dead melt metal -- this technical term means steel that does not react to severe freezing. To do this, ordinary steel is kept in the cooling stage much longer. This, naturally, reduces the overall volume of output of rolled metal: for example, when the proportion of dead melt metal was increased by 1 percent in the plan of the Kuznets metallurgical combine the annual production of rolled metal decreases by 19,000 tons. Such a circumstance is decisive: they silently hold back the output not only of dead melt metal, but also of rolled metal with economical thin profiles. And although an increase in their output would make it possible to reduce the very need for metal and produce a great savings in machine building, the logic of these effects cannot withstand the conflict with the simple, crushing and materially profitable logic of higher indicators.

It is precisely because the real results of the activity of the producer branch go beyond the limits of its departmental structure that in principle they will never coincide with its production indicators. Those who act on behalf of the department are usually not aware of this contradiction. The division that plans the development of ferrous metallurgy explains its refusal to introduce the achievements of science and to accelerate the output of the assortment of metals most needed by the consumer branches approximately as follows: "The country needs metal! In any case we are behind in the five-year assignment for the production volume, and if we follow all the proposals of scientists and the consumer branches, the arrears in the overall output of rolled steel will look even more significant. We cannot reduce the indicators! Nobody will allow that"

*SOTSIALISTICHESKAYA INDUSTRIYA, 25 March 1980

But perhaps it is all simply a matter of outdated indicators? Of course, in any case more intelligent indicators are better than unsuccessful ones. But let us pay attention: even of the new indicators every department is most willing to accept those that are in one way or another related to increased production volumes. Why is this?

The strongest motive which determines the behavior of the departmental staff is in operation here. If the department and its enterprises form a unified closed structure which encloses the producer branch, the power of the department, its influence in the national economy and the very position of the departmental staff depend primarily on the production volumes and the amounts of resources which it has. And these depend also, of course, on the volumes of capital investments which it can obtain from the state. One might ask what significance the introduction of large achievements of science and technology can have in the growth and strengthening of this closed structure if each of them inevitably leads either to a relative or absolute reduction of expenditures or to a decline of the growth rates of the output volumes in value or physical terms or to a reduction (even if it is temporary) of the needs for resources and capital investments, and also frequently makes it necessary to radically redistribute the resources?

A typical model of behavior when the departmental structure comes up against large achievements of science and technology is manifested in the history of the rejection by machine building departments of one of the outstanding achievements of domestic science and technology -- hydraulic extrusion of metals, which opens up the possibility of changing over from the technology of cutting metal to waste-free technologies of plastic deformation. Hydraulic extrusion -- the property of "fluidity" which metal acquires under momentary superhigh pressures -- sharply expands the boundaries of application of metals and creates the broadest perspectives for machine building (for example, the possibility of obtaining items from alloys that are so hard that no cutter can handle them). And for parts that are made of ordinary steel but by the hydraulic extrusion method, the mechanical properties improve significantly and they are sometimes as good as items made of alloy electric steel. But the major advantage of this new technology consists in that it makes it possible to radically change the entire appearance of industrial production. At one plant, for example, the automated hydraulic extrusion equipment replaced 400 press machines. At another plant this automated equipment, in terms of its productivity, replaced an entire shop of 100 metal cutting machine tools, and to do this it only had to be in operation two months a year.*

In recent years special powerful installations have been developed on the basis of hydraulic extrusion for waste-free production of large complicated parts. Such an installation replaces a universal press the size of a two-story building and weighing 25,000 tons. Even the largest of these new installations weighs only 25 tons and expenditures are recouped in ... 20 minutes of operation (the normative time period for recouping expenditures on

SOTSIALISTICHESKAYA INDUSTRIYA, 6 September 1978

a universal press is more than 10 years). As early as 1963, as a result of the use of hydraulic extrusion installations for producing high-precision billets especially for domestic purposes -- for example, for precision stamping of disks for turbine engines -- it was proved that extensive introduction of the new installations to replace the obsolete equipment for series manufacture of the most important parts would be tantamount to doubling the production of super-pure nickel and chrome in the country and that at the same time expenditures would decrease to one-one thousandth of the previous amount, while wastes of valuable alloys would decrease to one-one hundredth.*

But even after the passing of 20 years not a single machine building department has arranged for series production and large-scale industrial application of hydraulic extrusion installations, and the basic design was first described in authors' certificates for Soviet inventions with a priority for the years 1956-1958. At first glance it might seem that all these departments were simply unable to break out of the prison of conservatism or were afraid of the troubles involved in restructuring production. But "conservatism" did not keep those same departments from acquiring hundreds of hydraulic extrusions presses from abroad during these same years. The interests of the closed departmental structure in these situations are determined precisely by this orientation toward continuous growth of production volumes, capital investments and resources which it has at its disposal. The changeover to mass output of automated hydraulic extrusion equipment -- like its mass technological application -- could mean only one thing economically: with an immense final savings, there would be a reduction of the value and physical volumes of production, as well as of the base for capital investments. To take the initiative to cut funds oneself and to receive less than before -- where is there a worker in the ministry who would do such a thing!

Academician Yu. Ye. Nesterikhin gave the example of the unsuccessful attempt to introduce the new laser standard of length, which makes it possible to increase the precision of measurements and at the same time forces the department that is responsible for its introduction to curtail expenditures on copying and storing standard measures of length. This is the same departmental phenomenon as the model of the behavior of the staff!

The most curious thing in the situation with the laser standard of length is precisely where the departmental approach of the state agency comes from. When the State Committee for Standards acts as a truly state control agency with respect to the enterprises and institutions that do not form a cyclical system with it, then nothing can keep it from acting purely out of state interests. But when it acts as the center of its own system and is interested in self-consolidation and increasing its resources -- in this same place, with these same workers! -- there will be a departmental approach. It is a different matter to purchase installations from abroad. For additional funds will be allotted for this (in foreign currency). Many departments have followed the path described in the history of hydraulic extrusion.

*PRAVDA, 2 June 1981

Of course, increasing the state's foreign trade expenditures when the national economy can get by with internal reserves of scientific and technical progress clearly contradicts economic logic. But this is not so surprising: in practice this logic does not always coincide with departmental interests.

"Your Opinion? They Need Help!"

Our inventor, a man with the tired face of a prophet and a higher engineering education (and perhaps with an academic title) has quite possibly seen this saying: "If the mountain (our industry) will not come to Mohammed, then Mohammed (the inventor and scientist) will go ... to the editors of the central newspapers." Yes, sometimes one cannot avoid the impression that our newspapers are the ones most interested in introducing important inventions, and the least interested are those officials and organizations whom the state has officially assigned to look out for scientific and technical progress.

Sometimes a completely despairing but still persistent inventor, holding a newspaper article which has grippingly described both the merits of an invention and its disgraceful reversals of fortune, has forced his way through to the management of the scientific and technical administration in the system ... say, of the ministry of high-power machine building. The management, frowning with its graying brows, has written a resolution: "To the deputy chief of the scientific and technical administration, Comrade Morzhovyy. The inventor must be helped. Your ideas?" Having taken heart, the inventor hurries to Comrade Morzhoviy. True, it is not altogether clear why it is necessary to help him. Since he is the one who wanted to help high-power machine building! But these are just details, and the main thing is that the ice has been broken. He does not yet understand that such a resolution still does not mean a speedy conclusion. But Comrade Morzhovyy understands all this. It is not the first time he has operated according to the formula ... "Your opinion? We must help!" It is a repeat of a plot that has been played out in many skits. It is not real assistance, but a formal reply which binds nobody to anything.

In general departmental behavior (if this is understood not superficially, but as a historical phenomenon which deserves serious study) is manifested in the form of nonantagonistic, but vitally crucial contradictions in the most varied spheres of our social life. In the sphere of the psychological motivation for the behavior of the departmental staff it is the "splitting" of the position of one and the same person: the active engineer and specialist on the one hand, and the performer of staff functions on the other. In the sphere of state administration of the economy it means a lack of coincidence of interests: departmental and state. In the sphere of a specific economy it is manifested in the form of a well-known contradiction: that which is advantageous to the state and the society is not always advantageous to the department, and vice versa. Finally, in the sphere of basic political economic phenomena, it is manifested as a certain level of collectivization of production.

V. I. Lenin made a fundamental distinction between nationalization as a one-time political and legal act and "collectivization in reality" as a prolonged,

multistage process of real and effective mastery of the means of production in the interests of the entire society. V. I. Lenin understood collectivization in reality to mean "the degree of arrangement of a complex and precise network of new organizational relations which embrace planned production and distribution of products ..."*

The level of real collectivization of production is the level of development of social interconnections and interactions in the economy: between producers and consumers, among branches of the national economy, between the state and the branch, the branch and the region, science and production, and so forth. A closed departmental structure embodies and maintains that level of collectivization in reality which was necessary and sufficient for the age of the country's industrialization. But this level is obviously not adequate to solve the most complicated problems of the development of a modern economy, whether it be extensive introduction of the fundamental achievements of science and technology which revolutionize production or the organization of effective territorial production complexes, the creation of multibranch waste-free technologies, the solution of ecological problems or the normal functioning of the transportation system. The level of collectivization in reality necessary for successfully carrying out the tasks of intensification of the economy, is embodied in the form of organization of productive forces which has been defined in the USSR Constitution as a unified national economic complex.

It is important to understand that departmental behavior is not a shortcoming in the work of the staff. Departmental behavior is a method of administration which has historically taken form in a particular stage of real collectivization of production, and not the result of mistakes or bureaucratic distortions. It is directly related to the dual essence of the present-day ministries -- as central agencies for management of the national economy and as centers of their own economic systems.

Thus in order to combine successfully the advantages of the socialist system and the achievements of the scientific and technical revolution, it is necessary, in our opinion, to make essential changes in the organization of economic administration, and to overcome the tendencies toward closed departmental structures.

Signals Which We Shall Not Be Able to Ignore

So all that is left is to sit and wait until the national economy reaches a new level of collectivization of production? Is it possible even now to compare the unchangingness of the "volume" departmental interests with some kind of effective mechanisms of the statewide scientific and technical policy? In the decree of the CPSU Central Committee and the USSR Council of Ministers, "On Measures for Acceleration of Scientific and Technical Progress in the National Economy," adopted in August 1983, it is pointed out that the

*Lenin, V. I., "Poln. sobr. soch." [Collected Works], Vol 36, pp 171, 293-294.

State Committee for Science and Technology and the USSR Academy of Sciences are not displaying the proper persistence in its implementation. The State Committee for Science and Technology is not taking full advantage of the rights granted to it for control over the introduction of the results of scientific research into production.

Following improvement of the economic mechanism, legal norms which would help science to perform the function of "disturber of the peace" could also contribute to increasing the effectiveness of the unified state scientific and technical policy. In our opinion, the USSR Academy of Sciences should be given the right to evaluate the directions of the development of branch industries, the technical policies of head institutes, and also the most important technical decisions and plans.

This legally reinforced "power of authority" in the mechanism for state control of the national economy should be combined with the authority of power. On the basis of final expert evaluations, the USSR Gosplan and the USSR State Committee for Science and Technology could make planning-economic and organizational decision on a national economic and interbranch scale. But this would require considerably increasing their authority with respect to the branch departments and also avoiding becoming overloaded with their own branch functions.

In the final analysis a mechanism must be created which makes it possible to reveal and resolve the objectively existing conflict of interests in the system of state control of the economy -- a conflict of national economic and departmental interests. The creation of a mechanism for revealing and resolving the conflict of interests could, in our opinion, become an important step on the path earmarked by the aforementioned decree of the CPSU Central Committee and the USSR Council of Ministers.

It would be extremely important, for example, to introduce a special economic and legal system for obsolete production which would act as an uncompromising mechanism which places the technically backward enterprise and its department under especially severe conditions. The decree of the CPSU Central Committee and the USSR Council of Ministers, "On Measures for Accelerating Scientific and Technical Progress in the National Economy," will make it possible to lay the basis of the economic and legal system for obsolete production. The State Committee for Prices is now being given the right to establish rebates from wholesale prices (in amounts of up to 30 percent) for industrial products that are to be removed from production. There should be an essential change in the composition of certification commissions. They will become interdepartmental state commissions. Working on them will be specialists of the State Committee for Science and Technology who have not previously participated in certification. Moreover, it is the specialists of the State Committee for Science and Technology who should now be in charge of the state certification of those products which are of great national economic significance. Also participating on these commissions will be representatives of the USSR Ministry of Foreign Trade, who have the most reliable information about the best foreign analogues of new technical equipment.

Developing the principles contained in this decree, it would also be expedient to grant the USSR State Committee for Science and Technology the right to declare individual kinds of technical equipment that is being produced and technology that is being applied to be under the legal system for obsolete production. Then the financial agencies would automatically impose taxes which would deprive the enterprise of profit on items and products that have been obtained with backward technology taxes, and the Gosbank would introduce restrictions on financing obsolete production.

The right to exclude the volume of obsolete products from the indicators of the overall volume of fulfillment of the plan by the enterprise, association or department could be an effective means in the hands of the Gosplan and the State Committee for Science and Technology.

For special cases, exceptional authority can be granted to the USSR State Committee for Science and Technology. It is quite customary, for example, for the State Committee for Supervision of Safe Working Practices in Industry and for Mine Supervision to be able to halt production if further operation entails the threat of an accident. And yet a situation in which the most important achievements of science and technology are completely ready for introduction and are not applied for years causes losses that are no less than those from emergencies or natural disasters, but these losses are simply not subject to being accounted for. Therefore in cases where for many years there is a failure to fulfill state assignments for the introduction of especially important achievements, interruptions in the basic scientific and technical programs and also gross violations of the requirements of ecological cleanliness, the State Committee for Science and Technology should be granted the right to halt obsolete production.

It is possible that the first result of the proposed redistribution of functions and rights would be the appearance in the state control mechanism of signals about the lack of correspondence between the interests of departmental structures and the needs of the unified national economic complex which one cannot avoid hearing.

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WAYS OF IMPROVING UTILIZATION OF SCIENTIFIC POTENTIAL SUGGESTED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 1984 pp 67-74

[Article by I. S. Dreytser, division chief of the Kuznets Branch of the Scientific Research and Planning-Design Institute of the Extraction of Minerals by the Open-Pit Method (NIIOGR) (Kemerovo): "Branch Science: To Invent or to Introduce?"]

[Text] One morning we gathered in the neighboring laboratory along with representatives of the automotive administration of the Kemorovougol' Association, the main supplier of scientific products for this laboratory.

The gazes of those gathered there were turned toward the table, on which there was a device for some unknown purpose but with a very familiar shape. Two scientific workers were fussing around it, obviously putting it into a condition of militant readiness. When all the guests had come up to the table, the laboratory chief announced that they intended to demonstrate a mock-up of a device for controlling and accounting for the operation of large-cargo dump trucks. The small information station, which had been hastily cut down to the dimensions of the well-known Iskra-110 calculator, imitated the memorization of five parameters: overall time of operation during the course of a shift, running time loaded and empty, idle time per shift, and number of trips.

During the improvised "press conference" that followed the demonstration it was stated that there is a real possibility of expanding the problem solving capabilities of the station. According to the authors' estimates, its capacity could be increased by several more parameters (without making the design significantly more complicated).

The virtues of the device, incidentally, are not limited to merely accounting for and indexing the aforementioned indicators. In principle it is possible to hook it up to an ASU [automated control system] by an overloading processes. With series production the cost of the set is not much more than 100 rubles. The instrument is based on several inventions which the authors created previously, and its development is agrees well with the social order formulated long ago -- by the needs of production.

If one keeps in mind the possible scope of the utilization of these stations (in the Kemorovougol' production association alone there are 1,100 technologically equipped large automatic dump trucks in operation), the crucial importance of the work becomes clear.

Here is how the production workers themselves rated what they saw:

"I will take a thousand of them today!" -- one of them answered categorically.

"Oh, I will take about 300 of them for starters," -- another was more modest.

As the experienced reader has probably already guessed, these information stations are not being used to this day.

The beginning of series production is preceded by the manufacture and testing of an experimental and then a test model. And only when the experimental model undergoes industrial testing is a decision made about its series manufacture. Such is the policy in effect in the country, and it rests on a quite reasonable basis. The only technical device that is worthy of being produced in large quantities is one which has proved its workability. And it is extremely essential that it correspond completely to those qualities to which it lays claim, according to the author's design.

This stage -- experimental and testing -- is usually the longest one. And there have already been many discussions about how to reduce its duration. And this is understandable: the national economic losses from such an unforgivably slow advance of technical progress are extremely great. I am not even speaking about moral expenditures.

With all the uniqueness of each particular instance, this disease does have a common basis -- the poor arrangement of the experimental bases of the developer organizations, and sometimes the complete lack of them. It is this circumstance that predetermines the lengthy pre-series aging of the machine or instrument, regardless of how reasonable the idea on which it is based may be.

There are also other reasons, above all the unjustifiably long period of coordination and approval of the technical assignments for planning, the incorrigible policy for providing technical specifications, and numerous intra- and inter-plant barriers. But this is not what we are discussing here: the failure to introduce innovations begins with the lack of an opportunity to manufacture a mock-up or experimental model promptly and to make changes in it quickly if necessary.

All these considerations have introduced a healthy dose of skepticism into the discussion of the prospects of the information station. And one must admit that there has been more than enough justification for such a cautious attitude toward the innovation: a very weighty "persuasion" was provided by the fate of preceding developments of the same authors -- equipment for automated accounting and control of the operation of two main kinds of single-scoop dragline excavators and mechanical shovels which had already been brought up to the established series.

It took the two organizations more than 10 years to travel this path (in keeping with the branch specialization, the working plans for the stations and the manufacture of experimental models were entrusted to the Giprougleavtomatizatsiya Institute and its plant). Incidentally, even now, when all seven circles of this pre-introduction hell have been traversed, the fate of the stations has still not been decided. For understandable reasons, the experimental plant of the Soyuzugleavtomatika VPO does not want to take on such a burden (and it is not able to provide for series output). And the manufacturing plant has agreed to take on the construction of the station for draglines under the condition that their delivery be guaranteed under cooperation. The process of introduction has thus come full circle.

Today in the system of science-production, in the coal industry at least, there are no reliable organizational and economic mechanisms which could regulate the relations of the parties, providing if not complete harmony, at least normal compatibility. Ideally, one could speak about an equal partnership. Well-known decrees concerning improvement of the economic mechanism envision a whole set of such levers. But the most effective of them "work" in the processing branches, say, machine building. And the same things which could be useful in the coal industry have not made their way here yet.

Today the management of the Kemerovougol' association, with all its respectful attitude toward science, does not have the possibility of combining into one unit all the constituent parts of the plan for new technical equipment. For this reason in particular it is impossible to significantly expand the area of application of certain developments of the NIIOGRA and its basin subdivision. Thus the step-by-step system of repair of excavators, which practically eliminates costly and time-consuming capital repair from the cycle, has not been applied everywhere. Incidentally, this is simply because the enterprises do not have the necessary equipment, and the policy for financing repair in the USSR Ministry of the Coal Industry is changing slowly.

How is this delay reflected in the destiny of scientific developments? In the case of the information stations for excavators it ended with repeated planning. Technical progress in the electronics industry turned out to be more rapid and for this reason the developers had to change the element base several times. But still the additional labor expenditures are perhaps not the greatest problem here. It is more significant that the development, whose usefulness was confirmed during the course of comprehensive testing has still not been embodied in practice. Today the introduction of the stations depends on the plant of the USSR Ministry of Instrument Building, Automation Equipment and Control Systems. The interests of three departments converge here. And a fourth organization should coordinate them, one that is above all three -- the USSR Gosplan or the State Committee for Science and Technology.

But let us return to the experimental bases -- for it is from here that the innovation takes its first step toward series production. According to the decree of the CPSU Central Committee and the USSR Council of Ministers, "On Measures for Accelerating Scientific and Technical Progress in the National Economy," adopted in August 1983, it is intended to implement a complex of measures directed toward accelerated creation and technical outfitting of

testing and experimental bases and productions. Yet there are certain difficulties with their organization. One of the paradoxes is that the level of technology at the bases should be higher than in the plants for series production. Yet their equipment, as a rule, is fairly primitive. I am not even speaking about the problems related to the material and technical supply of such "less important" plants. Moreover, there are usually a number of machine building divisions in them. And this increases their dependence on cooperative deliveries.

But still the saddest plight is that of those institutes that have no experimental bases at all. Our own experiences convince us of that very well. Only theories come out of the end of a pen. Applied work requires a series of subsequent embodiments: blueprints, mock-ups and models. Breaking the chain of research-development-introduction has a painful effect on the final results. Thus, while it assured itself fairly high evaluation indicators this year, our institute failed to introduce a number of interesting technical decisions. And, after all, about 20 of the projects were executed at the level of inventions. And although the effectiveness of expenditures on conducting our research is on a level with or even surpasses many institutes in the area, it could undoubtedly be higher if the institute had the possibility of introducing several large developments.

But since the pace of scientific and technical progress reveals this dependency on the possibilities of the experimental shop of science, is this not the place to look for reserves for increasing effectiveness? Incidentally, the experience of the best branch and academic institutes of the country shows: high effectiveness is conditioned to a significant degree by a well developed experimental base.

This is the 15th year of existence of the branch of the NIIOGR -- the head institute of the branch for cyclical technology for the development of coal deposits by the open-pit method. And there have been approximately the same number of discussions of the need to create its own experimental base. Incidentally, it has already been designed twice -- initially a shop, and then a small work shop, but not a peg was driven at the construction site. And regardless of the financial capabilities, every time the implementation of the plans was postponed until better times ... for Glavkuzbasstroy. But when this organization has to make a choice between an industrial facility and an experimental plant for the scientific research institute, preference is given, naturally, to the former.

By the way, is this natural? What with the significant degree to which applied science lags behind the needs of production, technical progress in each branch is provided precisely through the efforts of the latter. It is another matter that the rates of this progress do not always correspond to the needs of production. But without providing the necessary organizational and material prerequisites it would hardly be possible to increase the scientific yield. The association for which our institute is working is not in a position to provide us with an experimental base and therefore we must provide our own. With the present shortages of repair capacities in the association, it is, to say the least, unrealistic to count on help from its plants. The

situation is no better in other institutes. The beginning of the 1960's was earmarked for work on the AK-3 set of frontal equipment for removing coal without human help. Today the developer institute, Giprouglemash, has only three models, of which only one is working for us here in the basin. This disgraceful list could be continued...

What is the reason why the rear guard of science is falling behind? It seems that to some degree this is the result of incomplete planning. But the nature of this incompleteness is fairly transparent. The strained national budget frequently does not allow for the allotment of capital investments in branch science in volumes that are sufficient for satisfying its needs.

For this reason, for example, the majority of branch institutes of the Kuzbass have created their material base gradually, over many years. Beginning their existence in makeshift facilities which were frequently poorly adapted, it was only with time that they were allotted the necessary allocations: initially for engineering facilities and housing, and then, if the institute managed to prove its right to existence, also for experimental capacities.

How does one untie this Gordian knot? I think that one of the ways is to organize centralized experimental bases. Obviously, it is easiest to create them on the territorial principle. The special purpose-program approach to planning research and development, which has been given the most favorable conditions under the current five-year plan, provides good prerequisites for this. In fact, with the existing level of investment activity the construction of experimental bases is simply not within the power of each branch institute. This can be felt especially in the eastern regions of the country where the capabilities of the construction complex are not as great as they are in the center and western regions.

Incidentally, it is not always expedient and economical to construct one's own base. For it is possible to provide for uniform loading of all of its sections only with a large-scale scientific and technical potential. Moreover, one experiences the difficulties involved in providing for normal organization of production at such primitive enterprises.

The creation of centralized experimental production which is represented by all machine building areas is organizationally and economically expedient, especially under the conditions of the concentration of the institutes of one or several branches. For instance, there are more than ten institutes of the USSR Ministry of the Coal Industry functioning on the territory of the Kuzbass. And only a few of them have their own experimental plants, or, rather, more or less large shops. They have somehow been adapted to the specific features of the institute, but, as a rule, their needs are not fully satisfied. A powerful branch experimental base working under the aegis of the technical administration of the ministry would solve practically all of the problems. It would be even more expedient to combine them at the interbranch level, under the patronage of the USSR State Committee for Science and Technology.

Special purpose-program organization of research and development changes the traditional structures of scientific research institutions. They are transformed into specialized centers for material-technical, informational, organizational and other service for research. It is as though the next, the third, division of labor takes place in science. Initially, we recall, theorists and experimentors had separate spheres of operation, and later, in our day, the information service was separated into an independent area.

The advantages of such specialization are fairly extensively "reflected in praises." The main merit of the specialized centers consists in that they provide for the most expedient utilization of the scientific potential. And this, in turn, ends up in significant scientific results. The researcher is relieved of work which is not appropriate for him and ceases to be a "pusher," an expeditor, a servant in science.

In addition to everything else, the centralization of experimental capacities proposed here will serve for further establishment of the special purpose-program method, filling it with new content. For today only a few of its features are being realized in the practice of planning research and development.

The idea of centralization was materialized well in such an organizational structure as the computer centers for collective use. This is the main direction for most efficient operation of costly electronic computer equipment. Now the sale of machine time is no longer regarded as a passing thing. The idea of inter-science service is based on the same principles. It is sufficient to take a look at the experience of the Institute of Organic Synthesis of the Latvian SSR Academy of Sciences. Here as early as the beginning of the 1970's about 10,000 analyses a year were performed "on the side" using the automatic micro-analyzer. The organization of an inter-science service will make it possible to increase the coefficient of the utilization of scientific equipment.

Under the 11th Five-Year Plan the development of science and technology should be placed even more in the service of increasing the efficiency of public production. The solution to this problem will require serious changes both in the organization of science in general and in its experimental shop in particular. And the sooner these changes are made, the greater will be the influence of science on the technical and economic indicators of production, and the stronger the bridges that join them will be. Then in the judgment requested in the title of these remarks, the divisive "or" can rightfully be replaced by a unifying "and."

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DISTRIBUTION OF EFFECT FROM INTRODUCTION OF SCIENCE AND TECHNOLOGY

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 74-80

[Article by I. A. Sadchikov, candidate of economic sciences, chief of division for technical and economic research of the All-Union Scientific Research Institute of Petrochemical Process of the USSR Ministry of the Petroleum Refining and Petrochemical Industry, and V. N. Peresun'ko, chief engineer of the division (Leningrad), a discussion: "They Have Been Introduced! How to Share the Effect"]

[Text] The problem of distributing the economic effect from the introduction of new technical equipment and technology among the organizations that participated in its creation is well known. The methodological imperfection of the practice of distribution leads to serious distortions of the indicators of the effectiveness of the work of scientific research institutes and planning and design organizations and enterprises.

Distribution ... According to Agreement?

The question of shared participation was first raised in the "Basic Methodological Provisions for Determining the Economic Effectiveness of Scientific Research Work" (1963). They envision the following distribution of the economic effect: research and design work -- 30-50 percent; technological work and preparing production -- 20-35 percent; organization and assimilation of the production of new technical equipment -- 25-40 percent.

This distribution was introduced temporarily, and it was assumed that it would be adjusted during the course of generalization of practice. But the temporary conditions were transferred practically unchanged from one set of methodological instructions to another. And the normative document that is currently in effect* gives approximately the same figures: from 20 to 40; from 20 to 40; and from 30 to 50 percent, respectively.

*The provisions concerning the policy for the formation and utilization of the economic incentive funds in scientific research, design, planning-design and technological organizations, production associations and enterprises that have been changed over to the autonomous financing system of organization of work for the creation, assimilation and introduction of new technical equipment on the basis of schedule orders (contracts). Moscow, 1980.

It says in the provisions: "On the basis of the specific nature of the work that is performed, the organizations (enterprises) can by mutual agreement establish different amounts for the distribution of the overall sum of deductions among the performers of the work."

"The specific amount of the funds assigned to each of the participants in the creation, assimilation and introduction of new technical equipment is stipulated in the schedule order (contract) for the performance of the work or in some other planning document which is approved by the higher organization. When the completed work has been accepted and after it has been introduced, the amount of money received by each participant is made more precise."

Attention is drawn first of all to the facile way the new provisions interpret the interrelations among participating organizations. While the "Basic Methodological Provisions" of 1963 stipulated that the refinements of the shared participation had to be backed up by calculations, now these refinements are possible simply by the agreement of the cooperating workers.

And the Cause Suffers

Reservations in the text of the official document ("as a rule," "other amounts of distribution ... can be established) only complicate the interrelations of the cooperating organizations when distributing the effect. For the concrete recommendations are not given for determining the volume, complexity and kind of work. In practice the cooperating organizations try to "stipulate" the largest possible share in verbal interchanges, frequently without drawing serious conclusions.

The classification of the kinds of work as universal for all branches remains questionable. The accepted classification, apparently, corresponds to the specific features of machine building. But as for such branches as the chemical, petrochemical and metallurgical industry, for them some of the kinds of work mentioned in the methods do not have clear definitions or boundaries.

The divergence in the notions of the content of the work for separate branches frequently leads to misunderstandings. Here is an example from the practice of the VNIINeftekhim [All-Union Scientific Research Institute of Petrochemistry].

Workers of the institute developed a technology for synthesis of dimethyl dioxane (for producing synthetic rubber). Previously in order to obtain dimethyl dioxane they used aggressive sulfuric acid and reactors made of high-alloy steel were purchased from abroad. The utilization of the original technology created by the VNIINeftekhim made it possible to replace imported reactors with domestic ones made of relatively inexpensive steel. Giprokauchuk developed a design for the reactors, and their manufacture was entrusted to the Uralkhimmash Production Association. The guaranteed economic effect in the form of savings on currency (because of not purchasing imports) amounted to 666,600 rubles for each reactor. When distributing the effect among the developers the Uralkhimmash Association referred the provisions that are in effect, and defined its participation in the work as the performance of

technological work, work for preparation of production and work for the assimilation and organization of the production of new technical equipment, that is, 70 percent of the overall effect. It is understandable, however, that the effect appeared primarily because of the development of the new technology.

Plant workers sometimes think that only their own activity is "work for the assimilation and production of new technical equipment." Consequently, all the funds allotted for bonuses for this kind of work go into the cash register of the enterprise. Yet it is clear that new technical equipment cannot be introduced without the participation of representatives of the developer. Spending long periods of time on temporary duty at the enterprises, they help to solve on the spot the unforeseen technological and technical problems in introducing new technical equipment. Both the plant and workers of branch institutes participate in the assimilation, but this circumstance is practically not taken into account.

Crediting the effect from the introduction of new technical equipment mainly to the industrial enterprises appreciably distorts the indicators of the effectiveness of branch science. Frequently the institutes develop new technical equipment, manufacture it at their own experimental test bases, deliver it to the consumer plant and participate in its assimilation. Their share in the economic effect approaches 100 percent, but according to the existing methods, the institute cannot receive more than 40 percent of the deductions. And the plant which uses the new technical equipment makes practically no expenditures on its introduction, but receives the savings and sometimes passes it off as the result of exclusively its own activity.

Specialists of VNIINeftekhim have proposed a highly effective new reforming catalyst (KR-104) to replace the AP-64 catalyst which is now widely used in industry. The economic effect from the application of the new catalyst is conditioned by a number of factors: the decreased cost of the catalyst, the prolongation of the period of its service, the increased output of final products, and the reduced norms for the expenditure of the catalyst.

The KR-104 catalyst has been used in the Kirishinefteorgsintez Production Association. The introduction of the new catalyst did not require any additional equipment or capital expenditures, nor did it require changes in the technological conditions. Nor was there any loss of time -- the catalyst is replaced in the installation during current repair.

But when distributing the economic effect that was achieved the plant was given 60 percent and the institute -- only 40 percent. Such a situation is hardly normal.

It is necessary to have a fairer distribution of the effect among the participating organizations for creative participation in the creation and assimilation of technical equipment and technology.

There is No Shortage of Suggestions

Recommendations for evaluating the contribution of the cooperating organizations to the work of creating and assimilating new technical equipment and technology according to the expenditures, mainly wages, have become widespread in scientific and methodological literature.* It is suggested that the "coefficient of creativity" be calculated. It is assumed, for example, that an average of 30 percent of the time of engineering and technical personnel is spent in creative activity, of workers in design organizations -- 60 percent, and of workers of scientific research institutes -- 90 percent. The ratio of time expenditures determines the "coefficient of creativity" at 1:2:3. This kind of substantiation seems questionable, since the very statement of the question of the significance of one kind of activity or another, as conditioned by public division of labor, is hardly correct. Additionally, they use as a basis the distribution according to the actual labor expenditures. It is not impossible that an institution which, because of poor labor organization or a low level of skills and efficiency of workers, has unjustifiably prolonged the solution to a technical problem for 3 years instead of 1, will as a result receive a bonus that is 3 times as large -- because of its inability to work productively.

S. I. Golosovskiy recommended that the share of the scientific research institute in the effect from the creation and utilization of new technical equipment be determined taking into account the time period from the beginning of the introduction of the development.** He suggests this time scale:

Time period from								
beginning of introduction	1	2	3	4	5	6-8	9-10	
Share of developers								
(percentage of total savings)	90	75	50	40	30	20	10	

The proposed scale can reflect to a certain degree the objective change in the contribution to the effect from the utilization of new technical equipment during the time of its operation. But this pattern is not always valid.

*See, for example: "Ekonomicheskiye problemy povysheniya effektivnosti nauchnykh razrabotok" [Economic Problems in Increasing the Effectiveness of Scientific Developments], ed. by V. S. Sominskiy, Leningrad, 1972; Puzynya, K. F., Zapasnyuk, A. S., "Ekonomicheskaya effektivnost' nauchno-issledovatel'skikh i opytно-konstruktorskiykh razrabotok v mashinostroyenii" [The Economic Effectiveness of Scientific Research and Experimental Design Developments in Machine Building], Leningrad, 1978; "Metodika opredeleniya effektivnosti nauchno-issledovatel'skikh i opytnykh rabot v tsellyulozno-bumazhnoy i lesokhimicheskoy promyshlennosti" [Methods of Determining the Effectiveness of Scientific Research and Experimental Work in the Pulp and Paper and Wood Chemistry Industry], Moscow, 1979.

**Golosovskiy, S. I., "Ekonomicheskaya effektivnost' issledovaniy i razrabotok" [The Economic Effectiveness of Research and Development], Moscow, "Moskovskiy rabochiy", 1973.

Practice shows that as the innovation becomes more widespread and as experience is accumulated, the enterprises bear less and less of the expense of its assimilation. Consequently, the contribution of the subsequent participants to the created effect does not increase, but decreases.

Our Suggestions

The distribution of the economic effect (and, correspondingly, deductions for bonuses for new technical equipment) is one of the elements of the economic mechanism, and therefore the percentage distribution should "work" for acceleration of the development and realization of innovations. To do this it is necessary to revise the proportions of distribution. There is apparently no need to calculate the amount of shared participation individually with various kinds of formulas for each work project. One should adopt a unified distribution which is suitable for any measure. In order to substantiate the percentage distribution, it seems correct to compare the existing expenditures on wages for one group of cooperating organizations or another (branch scientific research institutes, experimental plants, planning organizations, industrial enterprises) in the branch as a whole. The proportions that are obtained can be used as a base variant. This is fair, since the wages reflect the quantity and quality of labor that has been expended.

One particular remark is appropriate here. While in the scientific research institutes and design organizations the work for creating new technical equipment and technology is included in the basic activity (and the entire wage fund is included in the calculation), industrial enterprises use only part of their funds for new technical equipment (and, consequently, only part of their wage funds). It is necessary to single out from the wage funds of the enterprises that part which is paid to workers only for measures related to new technical equipment.

It seems that one should use as a criterion not the invented "coefficients of creativity," but the authors' certificates. Submitting applications for invention as the work advances shows its innovative and creative nature. Therefore the stages in which inventions have appeared are given more weight than the others when evaluating shared participation. The composition of the authors of the invention is of no small importance either. If there are both scientific workers and engineer-production workers among them, this means that both organizations (the scientific research institute and the enterprise) have participated equally in the creative work on the new technical equipment and their contributions are approximately equal (taking into account the number of co-authors from both sides). Otherwise, when the authorship belongs to workers of only one of these organizations, their contribution to the overall matter is considered to be greater. This approach will stimulate the performance of scientific research work on a high scientific and technical level.

Special attention must be given to the question of providing incentives for the enterprises which are the first to apply the innovation. In this case there is obviously a degree of risk (the probability of not achieving the expected technical and economic indicators) that is greater than when

introducing inventions with all the rough spots smoothed out. Expenditures of the innovator enterprise for the assimilation of the innovation are also greater than for those that come later. In order to provide incentive for the introduction of long-range developments, it seems expedient to introduce incentive coefficients which increase shared participation:

for enterprises that are the first in the branch to introduce the innovation -- 1.2;

for enterprises that are the second or third to introduce the innovation -- 1.0;

for enterprises that are fourth or beyond to introduce the innovation -- 0.8.

Table. Shared Participation in the Formation of the Economic Effect, %

Cooperating organization	Invention of NII Utilized Innovation introduced:			Joint invention utilized Innovation introduced		
	1st in branch	2nd and 3rd time	4th and beyond	1st in branch	2nd and 3rd time	4th and beyond
NII	60	70	75	50	60	70
Enterprise	40	30	25	50	40	30

On the basis of the above we have calculated the shared participation of cooperating organizations in the Soyuznefteorgsintez VPO of the USSR Ministry of the Petroleum Refining and Petrochemical Industry. The shared participation of the pair "branch NII -- enterprise" is presented in the table.

For summing up the results of socialist competition of scientific research institutes in the branch, the economic effectiveness of the work of the NII's is calculated taking shared participation into account. The utilization of the suggestions will contribute to a more correct determination of the winners.

But a final solution to the problem will require the efforts of economists of many branches. An analysis of the experience that has been accumulated can be extremely useful here.

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MANAGEMENT OF SAVINGS FROM INVENTIONS DISCUSSED

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[Article by I. G. Kuchmazokov, chairman of the area VOIR (All-Union Society of Inventors and Efficiency Experts) council of the Kabardino-Balkar ASSR (Nalchik): "The Effect from Invention -- In a Separate Account"]

[Text] Innovation proposals annually save the country more than 6 billion rubles. Even in the small Kabardino-Balkaria the annual effect exceeds 18 million rubles. Each ruble of expenditures on streamlining produces more than 20 rubles in profit.

If asked how many rubles have been saved by efficiency experts of a given enterprise, the manager will proudly give figures with three zeros. But to the question: "Where they spent?" he will most likely not be able to give a specific answer. Why? The existing provisions concerning inventions and efficiency work do not require that these savings be deposited into a separate account and used for specific purposes. As a result, it is as though they were dissolved into the overall production expenditures. At the Prokhladnensk plant for semiconductor instruments in 1982 2 million rubles were "dissolved" this way, at the Tyrnyauz tungsten and molybdenum combine -- more than 1 million rubles, and so forth.

But there is perhaps no greater problem than the fact that funds are dissolved in the overall expenditures of the enterprise? In our opinion, concreteness and clarity are still necessary. Experience shows that efficiency experts and inventors want to know not only the sum of money saved by their innovations, but also the nationwide significance of their contribution -- say, how many additional products were produced by the enterprise with the money that was saved, what school was constructed, or in what sports or cultural and health institution the money was invested. Therefore there is some point in depositing it into a separate account of the enterprise, keeping track of it separately, and spending it for specific purposes, for example, for new technical equipment, scientific research and experimental design work, the creation and maintenance of experimental bases, social and cultural measures, and also further development of invention and efficiency work.

As a rule, the efficiency expert receives a monetary remuneration for his innovation. Unfortunately, he sometimes has to overcome no small difficulties first. The exceptionally complicated and unspecific instructions for determining the savings from an efficiency proposal are confused by a table for calculating the author's remuneration.

Someone at some time thought up the maximum and minimum limits of the payment for efficiency proposals and inventions. Why not introduce the following rule: from each ruble that is actually saved, the author of the efficiency proposal receives so many kopecks. And then the honorarium can be calculated without any red tape in the mail.

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INCREASED EFFECTIVENESS OF ENGINEERING LABOR URGED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 83--93

[Article by S. S. Starshinov, candidate of economic sciences (Krasnoyarsk): "The Role, Payment and Return from the Engineer"]

[Text] The subject of the effectiveness of the labor of engineers never leaves the pages of the press. The problem is not new, and it is no less pressing than it was 5 and 10 and 15 years ago. True, during these years attempts have been made to effect a change for the better. Thus salaries have been increased somewhat, their "spread" has been expanded, and recertification every 3-5 years has been introduced. But these measures have not produced an essential effect.

Why?

In our opinion they were not systematic, and were inconsistent or partial in nature. Thus the salaries were increased within the limits of the overall increase in salaries of engineering and technical personnel and employees, and therefore this did not produce any special advantages for engineers and it did not increase their prestige. Moreover, since the increase was greater for lower-paid workers (copyists, technicians and so forth), the value and prestige of the labor of qualified engineers even decreased. Instead of differentiation, another step was taken toward equalization.

Take the system of recertification. The lists of officials who are subject to this are approved by the ministries and departments. As a result there is a lack of coordination. For example, in light industry all engineers must be certified, beginning with the rank-and-file, and in machine tool building -- only the managers, beginning with chiefs of groups and bureaus and on up. One can give as many examples as one wishes in which engineers with diplomas sit for decades in rank-and-file positions, never once being certified or raising their qualifications.

Expanding the "range" of salaries makes it possible to encourage talent, conscientiousness and experience. But it contributes to such phenomena as subservience. Being unsupervised, the right to provide incentives is utilized by the administration at its own discretion and, need one add, this is not always principled.

In the press they have repeatedly discussed the suggestion of relieving engineers of duties that are not properly theirs and increasing the differential payment along the "horizontal," depending on the amounts of their personal contributions. Why has this suggestion not been realized?

Let us imagine for a moment that we are beginning to carry out this proposal. What do we do with tens of thousands of pseudo-engineers who hold engineering positions, receive the corresponding wages and perform the work of a technician, machine operator, courier, and so forth? Who will determine the growth of the engineer, and also plan the increase in his earnings? Where will we get the money? There is a mass of problems, although they can be solved. True, they can only be solved all together, but who can do this? Who can and should be responsible for these questions? Each department for itself and at its own discretion?

It seems to me that the fact that we are not realizing a proposal whose usefulness is obvious shows that there is an essential problem in the system of production administration. And above all -- ineffective distribution of the responsibility for engineering support for production.

With the shortage of labor force becoming more critical, the role of engineers is increasing. The growth of the able-bodied population is decreasing sharply and it is necessary to introduce technology that does not require human intervention. The traditional deposits of minerals are being exhausted or the geological conditions for mining them are deteriorating -- and it is necessary to increase the share of wealth extracted from the earth, to search for replacements for traditional materials and so forth.

Of course, successes in industry depend not only on engineers, but also on administrators, planners, economists and scientists. But frequently the most excellent economic, administrative and planning decisions cannot be implemented without the proper engineering support. In the 1980's there is a restructuring of the economic mechanism in progress. And one must understand that the engineering body, which is most directly related to it, must also be radically restructured.

How does one increase the return from engineers? We must impose a condition at once: half measures and uncoordinated efforts will not solve this problem. It is necessary to have a system for organizing engineering support for production and a special-purpose program directed toward its creation. This program, in our opinion, should include a number of subprograms, and one of them is --

Improvement of the Organization of Engineering Labor

There is no need to prove that, like any specialist, the engineer produces the greatest advantage when and only when he is working in his own specialty. What distinguishes the labor of an engineer from any other? The fact that it presupposes specific engineering knowledge, abilities and skills. The use of the engineer in any other job, for example, for typing, correspondence, transmitting others' instructions, registration and so forth, inevitably

reduces his output. Yet the results of research show that frequently qualified engineers spend from 30 to 80 percent of their working time performing duties that are not included in their specialty. This situation has been brought about by a number of factors, of which the most important may be the inadequate amount of attention paid by managers to the organization of engineering labor.

Today it is practically impossible to separate out the contribution of engineers to the work of the enterprises, or in any case it cannot be given a quantitative evaluation. Everything goes into some common pot. Engineers are also given bonuses according to the work of the enterprise as a whole. Any practitioner knows that the plan may not be fulfilled because of a thousand and one reasons, and only some of them pertain to engineers. Nonetheless they can receive bonuses when they work poorly but the enterprise as a whole meets the indicators, and they can be deprived of bonuses when they have worked excellently but the enterprise has not fulfilled the plan.

An attempt to evaluate the contribution of individual engineers was made when creating systems of defect-free labor. A list of possible mistakes was drawn up, and an empirically established reduction coefficient was applied for each of them. A job without any mistakes was given a 1. At the end of the month reduction coefficients were subtracted for mistakes made during that period. The amount of the bonus depends on the result, if, of course, there is one at all, that is, if the enterprise has fulfilled its indicators. Thus the system of defect-free labor evaluates how many mistakes an engineer has not made, and not what he has done that is useful.

Everyone understands that there is a direct connection between the organization of the labor of engineers and the fulfillment of the plan. But at the same time, between the labor of the engineer and the return from it in the form of improvement of technology, product quality and so forth there is a time lag which sometimes amounts to several years. Therefore it is necessary to have a system of measures which forces even the least far-sighted manager or the one who is most taken up with current affairs to be concerned about utilizing engineers to the greatest advantage. Let emphasize again: it is a system of measures and not individual ones.

Such a subprogram could include the following tasks:

the creation at each enterprise of clear-cut instructions for each engineering position, which exclude functions and duties that are not related to the utilization of specialized knowledge;

the publication at the enterprise of collections of normative documents that are in effect for each engineering position;

mandatory study of the job instructions and normative documents by each newly hired engineer, and also a testing of his knowledge at each certification;

a check (both internal and a general inspection) on the correctness of job instructions and collections of normative documents and their correspondence to the work performed by the engineers;

the provision of engineers with the working conditions necessary for the performance of the job instructions;

the application of sanctions for incorrect organization of engineering labor.

Another subprogram for improving engineering support for production is

Improvement of Training and Retraining of Engineers

Our country holds first place in the world both in terms of the number of engineers who are already employed in production and in terms of the number of young specialists who are graduated annually from higher educational institutions. At the same time there is a widely ramified network of institutes for increasing qualifications. This is a large force and it also entails large expenditures, and therefore we have the right to raise the question of their effectiveness.

While the level of purely technical training of engineers and their knowledge of such engineering disciplines as resistance of materials, the theory of machines and mechanisms, the technology of metal working processes, smelting and so forth is generally fairly good (although it varies among graduates of old and new VUZes and VTUZes, and those in the capitals and in the provinces), the general problem is the unsatisfactory training in questions of production organization, management theory, economics, sociology, engineering psychology, standardization and quality control, and so forth. Graduates who come to the enterprise frequently have a vague idea about its structure, its internal and external connections, goals, and questions of the strategy and tactics of engineering support. Having arrived in the division, bureau or shop, the young engineer is frequently in the position of a person who cannot swim who has been thrown into the water. He must grasp at the straw which existing practice frequently turns out to be. The newcomer does not have enough knowledge to take a critical look at it. And once he has mastered it, he must begin any attempt at innovation by breaking down his own already ingrained ideas and habits.

The question of retraining engineers is even more serious. If the student, whether he wants to or not, must study the disciplines included in the program, take tests and examinations, and defend course projects and diploma work, the engineer who is working in production far from always has an opportunity to retrain himself promptly, to augment and update his knowledge, even if he wants to.

From my observations, the enterprises do not send nearly as many engineers as they should to courses for increasing qualifications, and frequently they do not send the ones who need it. In fact people who are needed in production are replaced by "casual workers," "masks" and people who are afraid to get their hands dirty, that is, those who both before increasing their qualifications and afterwards do nothing useful and whose absence is unnoticed in production -- whether it be a month, a half year or a year.

The effectiveness of courses organized at the enterprises themselves is poor.

Here the teaching is entrusted to specialists on the basis of the positions they hold, and not on the basis of their readiness for this kind of activity. Many classes are conducted only on paper (and paid for promptly), while in fact there is no training.

In our day knowledge rapidly becomes obsolete. What with all the everyday trivia, it is not easy to update it, especially psychologically. Increasing qualifications should become a necessity. Yet the managers of enterprises frequently do not try to conceal their negative attitude toward workers who have expressed a desire to increase their qualifications in courses with leave from production. "You decided you need a rest? And who will fulfill the plan?" -- such is the usual reaction. The fact that an engineer who for years has not increased his qualifications impedes the development of the enterprise is ignored, as a rule.

Administrative measures will hardly help to develop in the managers an interest in increasing the qualifications of the engineers who have been entrusted to them, although it is possible and necessary to keep track of the way this is handled and the actual results. In order for increasing qualifications to become a necessity for engineers, the subprogram should envision:

planning for the enterprises stricter indicators of the quality and the ability of the products that are produced to compete at the international level, which cannot be done, as we know, without skilled engineering support;

increasing measures of responsibility of the managers for fulfilling these indicators;

inspecting the system of increasing the qualifications of engineering and technical personnel, improving the reporting on the training and placement of engineering personnel, and increasing control on the part of party agencies.

The following subprogram is called upon to provide for

Increasing the Stimulating Role of Payment for Engineering Labor

The earnings of the engineer are directly dependent on his advancement up the service ladder. There is now no more painful issue for engineers than the evaluation of their work.

A quantitative evaluation of engineering labor is complicated, costly and can rarely be accurate. The objective complexity consists in the excessive breaking down of the entire engineering task into microparticles performed by individual engineers who frequently do not have a clear idea of the task as a whole. Yet only by completing the entire task is it possible to obtain a quantitative evaluation -- socially necessary labor-intensiveness, innovation, patent suitability, technological improvement, economic effectiveness, ability to compete and so forth, on which the amount of the payment depends. The very statement of the problem of evaluating the labor of an engineer who performs partial assignments is incorrect. The value is in the final result of the

labor and not in its intermediate stages. Otherwise it is impossible to substantiate objectively the amount of the wages.

What is payment for time worked -- a salary which is constant for each specific position? It is payment for labor whose quantity should also be constant. A change in the quantity of labor in keeping with the principle of payment for labor should also entail a change in payment. The establishment of a permanent salary for an engineer is based on the assumption that he works with the regularity of a timing mechanism and produces products of equal value during various segments of time. But this assumption is absurd. The intensiveness of the work of an engineer at an enterprise depends essential on such changing factors as the assimilation of the new product, renovation, modernization, that is, things which are objectively not uniform. Yet the wage fund and the amounts of the salaries of engineers do not change. Thus one artificially includes quiet periods, half loads and, conversely, overloads.

It is difficult to agree with a viewpoint which justifies such a policy. It seems to me that by setting a low salary for engineers but in no way reasonably substantiating their numbers, we not only do not save even on wages as such, but we are even being extravagant (not to mention the quality of the work that is done by low-paid engineers). Maintaining a larger number of engineers or, rather, engineering positions than is actually required makes the need for labor force more critical. We are forced to pay high wages to service personnel and workers in occupations with no prestige and therefore a shortage. Moreover, they are granted free travel, a place in the dormitory, a residence permit, and privileges for acquiring apartments. At enterprises where there is a critical shortage of workers it is not unusual to have monthly earnings of 500 rubles and more.

Allow us to state that the last circumstance is directly related to the low pay of engineers. When allotting funds the control amount is the average earnings. In order to keep it within the established limits, it is necessary to compensate for the high earnings of workers by maintaining surplus engineers and technicians in the lower-paid categories. But, as we know, a thousand rabbits are not equal to one lion. This is a vicious circle: low-paid engineering and technical personnel are not capable of using engineering methods to reduce the shortage of workers, and the latter makes it impossible to maintain a small number of engineers, but ones who are highly paid and who have high qualifications.

What can one suggest here? Obviously, one needs three kinds of payment for engineers: time-rate-plus-bonus, piece-rate-plus-bonus, and job rate. The kind of payment would be established on the basis of the nature of the work. Thus for those who are performing production service functions which objectively differ in volume, (engineers of the BRIZ, the technical safety division, information engineers, seminar leaders), it is possible to establish time-rate-plus-bonus payment. For engineering work which can be normed (for example, that of designers and technologists), it is expedient to have piece-rate-plus-bonus payment. It is reasonable to introduce job-rate payment for entire engineering projects, whose implementation has independent value and

whose effectiveness can be determined precisely enough ahead of time. These include development or modernization, and the manufacture and introduction of instruments, equipment, devices, means of mechanization and automation, and progressive new technology.

The corresponding work has already been started. In Leningrad an experiment is being conducted for improving the payment for the labor of designers and technologists and for increasing the responsibility and motivation of engineers for improving the quality of their labor. The experiment consists in performing a large volume of work with fewer personnel. During 1983-1985 it will be necessary to carry out two most important tasks: first, to test the system which provides for a direct dependency between the wages of engineering and technical personnel and the results of their labor, and, on the basis of this, their earnings without separating out additional funds; second, to improve the ratio in the wage level between engineering and technical personnel and workers (for more detail, see SOTSIALISTICHESKIY TRUD, 1983, No 8, pp 35-38). Engineering support at enterprises which use the proposed forms of engineering labor will appear as follows.

For each year the scientific and technical council will develop (if necessary, using consultants from scientific research and planning organizations) a special-purpose comprehensive program for engineering support for production. It will consist of subprograms, each of which performs an independent engineering task. Current tasks are put into a separate block. For each subprogram one determines the goals and the necessary resources, after which a grid schedule of work is developed, which will probably be provided with resources. Knowing the expected economic effect, the approximate cost and the duration of the planned work (by analogy with work performed in the past with the usual forms of payment), it is not difficult to establish the amount of job-rate payment which provides for a savings even on wages themselves, and optimal time periods for performance, which are included in the schedule. Next comes the stage of creation of comprehensive brigades (including workers), one for each independent task. To do this, all the engineers of the enterprises are informed of the subject matter, technical assignments, amount of payment and deadlines for performance of the work; a time period is established, during the course of which those who wish to head brigades can submit their applications with explanatory notes, diagrams and justifications for the proposed solutions. They are considered by the scientific and technical council, and the authors of the most acceptable plans are appointed brigade leaders if they have the necessary qualifications and experience.

In our opinion, attention should be given to the experiment that is being conducted at enterprises and organizations of Novosibirsk and Novosibirsk Oblast for including engineering and technical personnel and employees in brigades, sections and shops on the basis of the experience of the Novosibirsk Elektrosignal Plant, which was already written about in the magazine (see EKO, 1981, No 10, pp 58-73). This experiment can be of great economic significance. Incidentally, the Elektrosignal experience is already demonstrating the expediency of its extensive dissemination.

For the block of current tasks, for which the application of the piece-rate-plus-bonus payment was recommended, it is necessary first of all to norm the typical work and, if necessary, to establish increasing or reducing coefficients with precise criteria for their utilization. Piece-rate-plus-bonus payment also makes it possible to significantly reduce the number of engineers who are needed.

It is natural that the application of the job-rate and piece-rate-plus-bonus methods of payment requires a high level of organization of management and a large amount of preparatory work, particularly prompt provision of the brigades with the necessary resources and conditions (analogous to the brigade contract). At the same time a large part of the load of supervising engineering work is removed from the managers; the psychological climate in the collective improves because the main factor that causes people without real qualifications for management work to strive for these posts is no longer there. For if the system of engineering labor and its organization are changed in keeping with our suggestions, the requirements on managers will increase and this will make these posts seem less like sinecures. And there still remain adequate if not great opportunities to earn good money by performing ordinary engineering (not management) work.

One can make the objection that with the proposed system there will be a sharp increase in the wages of engineers and a large number of people who currently hold engineering positions will be released, and so there will be the problem of placing them in jobs. Neither objection has any real foundation, since the wages will be increased only for those who are really knowledgeable, energetic, thinking specialists -- the real engineers. This increase will be more than compensated for by releasing people who are practically dependents of the production organism. As for their job placement, under the current and the next two five-year plans the influx of labor force into the national economy will decrease. Of course it is not easy to abandon comfortable positions and begin to work to one's full capacity. But it is extremely useful. And so the subprogram will include:

the development of new forms of payment for engineering labor, including the creation of a complex of normative, legal and other kinds of documents, their experimental introduction and adjustment, taking into account the results that have been obtained, and the preparation of recommendations;

the introduction of a system of measures which increase the responsibility of managers for the final results of economic activity and the effectiveness of its engineering support.

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LETTERS ON JOB ADVANCEMENT, COMPETENCE SURVEYED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 94-103

[Review of letters in response to article by A. A. Avakyan, "Feedback," EKO, 1982, No 9: "Promotion, Competence and Authority"]

[Text] With the publication of the article by A. Avakyan, "Feedback," and materials from the EKO "round table" discussions (EKO, No 9, 1982; No 2, 1983), we began our discussion of the problem, "The Production Manager: How to Prepare Him?" The editorial mail demonstrated the readers' great interest in this problem. And this can easily be explained. The processes that take place in the country's economy are placing greater and greater demands on the people who head up the labor collectives.

Thinking about the problem of promoting and training personnel, agreeing or disagreeing with our articles, and presenting their own point of view, many readers discuss first of all the growing responsibility of production managers and, on the basis of this, make suggestions for improving the system of selection and training of production commanders.

"The Chain Reaction of Actions, Thoughts and Words"

A labor veteran from Tomsk, a member of the CPSU since 1931, A. P. Novoselov has worked for the last 20 years as chief of the plant's equipment bureau. As part of his job he has visited many enterprises of the country. Unfortunately, he notes, there are quite a few cases in which there has been nobody to turn to regarding the breakdown of equipment; nobody has been personally responsible for this. On the scale of the country, with the existing intereconomic ties, such poor management causes immense difficulties for production.

"I recall one of the letters from V. I. Lenin to N. P. Gorbunov," writes A. P. Novoselov. "It says there: 'Take your time at filling out the order for hydraulic turbines, since we have a terrible shortage of them. This is the height of disgrace and shamelessness! You must find the guilty parties ... Establish precise personal responsibility for the work of this plant and the orders sent to it.' (Lenin, V. I., "Poln. sobr. soch." [Collected Works], Vol

53, P 163.) What extreme precision and clarity of the requirement to observe state discipline!"

Planning discipline is a most important, but not the only aspect of the responsibility of the modern manager. In many cases, the readers think, the demands on production managers are interpreted too narrowly. "If there were indicators of the plan which would require that they not abuse their positions and that they not violate moral norms -- this is sometimes all that is required of the manager," writes the engineer V. N. Grigor'yev (Kiev).

Developing the idea of the comprehensive responsibility of the manager, the head designer of the plant for glass items from the city of Sevan in the Armenian SSR, R. N. Avanesyan, formulates it in the following way: 'With the decisions he makes, with his manner of dealing with people, in brief, with his style of management, there begins a giant chain reaction of deeds, thoughts and words which go far beyond the framework of a given organization. And it is difficult to overestimate this system of education by action, by example. For a person spends a large part of his time at work. It is here that he forms his views which determine his position in life. Therefore the educational role of the manager with respect to his subordinates is of no less if not more significance than his organizational activity in dealing with production.'

The readers make their own suggestions for improving "feedback" and evaluating the work of managers. "It is necessary to differentiate both the methods of promoting managers of various categories (since the requirements for their business qualifications differ) and the means of evaluating the results of their activity," writes the chief of the planning and economics division of the Krasnyy Oktyabr' metallurgical plant (Volgograd), I. I. Usacheva.

S. Ye. Babich, an engineer from Chirchik thinks that reliable "feedback" which makes it possible to determine the quality of the work of the manager is provided by periodic circulation of questionnaires with subsequent processing of the information on electronic computers. He suggests that the results of the questionnaire should be discussed by the enterprise party committee.

I. G. Smolyakov of Nazarovo in Krasnoyarsk Kray too thinks that questionnaires are a reliable method of "feedback." "No system of advancement of management personnel guarantees that there will be no mistakes. It is important to correct them as quickly as possible. To do this, each year an anonymous questionnaire should be used to study the opinion of the masses concerning the managers and their activity should be evaluated on the basis of this."

A candidate of economic science from Chelyabinsk, V. G. Kvartovkin, suggests considering the responsibility of the manager on three planes: to the higher state agency, to the collective and to the party committee which has approved him. And in order to increase this responsibility, it is necessary to take such measures as selection or approval of the appointed manager at a meeting of the collective (section, shop, enterprise service) of which he is to be in charge. After a certain period of time he should be approved again at a meeting of the same people.

"Everyone Should Have His Rating"

How does one select a manager who is capable of assuming the responsibility which is to be placed on him? The readers make many suggestions and in so doing emphasize that the main thing is the observance of Leninist principles of selecting personnel. Many heartily support A. A. Avakyan's suggestion to augment the certification with competitive projects.

A mining engineer from the city of Shakhta in Rostov Oblast, G. M. Shirman, writes: "For more than 53 years I have been working in plants, the gold mines and the coal industry. I have known many people who have reached high positions, of whom everyone said respectfully: 'an excellent person and a bright spirit.' It is remarkable that not a single one of them made his way easily. As a rule, these people owed everything to their personal qualities -- knowledge, talent, love of labor, persistence, tact, and so forth.

"But one also encountered those whose advancement resulted from family ties and shrewdness. They did not remove the barriers, but walked around the obstacles.

"Judge for yourself what those around him will think when, passing over people with experience, knowledge and initiative, the person who is appointed manager is someone who is remarkable for nothing except his birth and his acquaintanceship with influential people.

"Usually, when the collective learns about such an appointment there are arguments about how long the new chief will last and what they will do with him next. Therefore I heartily support the objective methods proposed by A. Avakyan for selecting candidates for management."

D. A. Galoyan, L. A. Sarkisyan and A. A. Sarkisyan from Leninakan categorically state in their collective letter: "It is necessary to stop up all sources of subjectivism and protectionism when selecting the manager! In production everyone should be in his place, where he can produce the maximum output. The idea is simple and obvious, but it is not so simple to realize it! Every enterprise seems to have its own approach to certification. In Novosibirsk itself, judging from the 'round-table' discussion, at one plant they have secret voting for evaluating the person being certified, and at another they do not, in some places the director is on the certification commission, and in some places he is not included. In a word, there is a total lack of coordination, which cannot be justified either by the specific features of the organization or by the branch it belongs to. And this is in just one city, albeit a large industrial center! It is necessary to improve the procedure for certification and introduce a competition of projects. Then every specialist will have a 'rating' which he has earned."

This term -- rating -- is widely used in sports. Twice a year the individual coefficient of the leading chess players -- their rating -- is announced in the press by the international and all-union chess federation. The rating makes it possible to judge objectively the sportsman's position on the "table of ranks" and makes it possible to avoid subjectivism when forming the team for domestic tournaments. This is why the authors of the letter brought this up.

"A large part of what was suggested by A. Avakyan, including the competition of projects, is useful for selecting and training personnel who would be able to hold management positions," write an engineer from Odessa, L. P. Freyzinger. "Although the author's conception of 'feedback' cannot be regarded as flawless, for the most part A. Avakyan is right: it is necessary to develop clear-cut scientifically substantiated criteria for evaluating the business qualities of candidates for promotion. Both from experience and from information from other enterprises I know that certification is frequently only a formality, and therefore there are not enough middle-level managers. They are selected according to a number of indicators, but not always according to the decisive ones. And without an intelligent middle level, the entire strategy of the top manager of the enterprise remains nothing but good wishes or a beautiful dream, since there is nobody to realize it."

A reader from Kiev, B. I. Braslavskiy, recalls that more than 15 years have passed since the introduction of certification for scientific workers and more than 10 years have passed since this was extended to engineering and technical personnel and employees of enterprises. "The time has come," he thinks, "to discuss separately and generalize existing experience (and it contains both positive and negative aspects) and come to a conclusion about how to conduct certification."

"At many enterprises and scientific research institutes they are introducing standards for the management system. I think that standards are necessary for conducting certification as well: initially it would be necessary to create a typical interbranch standard, and then a branch one, taking into account the specific features of the branch, and, finally, one for the enterprise."

"Certification should be extended to managers of enterprises and their deputies. Of course it should be conducted by commissions of the higher organizations. In addition to everything else, this will make it possible for the higher managers to see and evaluate the personnel potential of the enterprises, and to include the best of those who were certified in their reserve for advancement."

A Hero of Socialist Labor, a deputy of the USSR Supreme Soviet, and the general director of the "Elektrosila" Association, B. I. Fomin (Leningrad) thinks that all the work for selecting and training management personnel in production should begin with the line unit. At Elektrosila they hold the opinion that the only people who can be managers of shops, and later of enterprises, are those who have travelled the path of the production organizer, beginning with the position of foreman. This idea has been reflected in the methods for forming the reserve for advancement and the work with it. "The line unit is the foundation of everything," asserts B. I. Fomin.

It is not out of place to recall that Boris Ivanovich Fomin himself began his business career as a shop foreman, and later was deputy chief of the production division, shop chief, deputy head technologist, deputy head engineer and head engineer. In 1943 B. I. Fomin was appointed general director of the association.

T. M. Khabayev, a deputy shop chief from Ordzhonikidze, also thinks that the entire system of selection and advancement of management personnel must begin with the positions of line managers -- foremen of shifts and sections.

Problems of line managers, their advancement, the organization and payment for their labor, and the shortage of personnel in these positions received an especially great response in the editorial mail. Many authors are trying to figure out why these positions have lost their prestige.

The Line Unit -- The Foundation of Everything

A foreman of the Sibelektroterm Production Association, S. Lebeshev, disagrees with those participants in the "round-table" meeting in Moscow who think that VUZ graduates do not want to become foremen because they are afraid of the difficulties in working with people.

"No, it is not a matter of difficulties, but of the fact that in the work process it is necessary to part with many ideas and illusions. When a young engineer who comes to a shop begins to notice shortcomings in the organization of production and talks of them out loud, he is told that he is not patriotic and is hampering production. After this there is nothing left for him to do but to depart from his ideas and be silent, accepting everything as proper, or to request to be transferred from this shop to an engineering position."

A mining engineer, K. Iskrov, from Dzhezkaztan Oblast tries to give a more detailed picture. After completing the institute he worked for 8 years as a mining foreman, and then deputy chief and chief of the section; he is now a scientific associate of a scientific research institute.

"In any position a person's main interest is the possibility of a creative approach to the work. With a conscientious attitude on the part of the management, a person who is employed in creative labor is capable of overcoming considerable interference and obstacles. These are generally known truths. But, in my opinion, it seems that the main shortcoming in the work of a line manager is the impossibility of making a nonstandard decision, of introducing an element of innovation into the production process. As a rule, any independent decision is greeted with perplexity by the management. But having entrusted the section to the person, the management still cannot find the resolve to grant him independent control of the section. Section chiefs involuntarily become chief clerks with a trade union and supply emphasis. They are concerned about promptly filling out technical documentation and issuing special coupons for milk, they look for absentees in their apartments, and so forth.

"Another shortcoming of the position of a line manager is the length of his work day. When I was a section chief I arrived at the bus stop at 7:30 a. m. and I returned home at 7:30 in the evening, had dinner, and after barely taking the newspaper in my hands, fell asleep. But at 9:30 in the evening I had to go again to the bus stop and return for evening duty. I returned home at 11:30, as they say, "beat," tossed and turned in bed until about 2:00 in the morning and then finally went to sleep, and then at 6:30 in the morning I had a terrible struggle to wake up. And so it went from day to day.

"While I was working in the mining industry my daughter was born. And then -- it was like the refrain from an old song: she grew, entered the first grade and I actually never saw her. Later, when I had already become a scientific associate, we had two sons. I now have the opportunity to devote much more attention to them, and I derive immense satisfaction from this.

"But when you weigh all this it become clear why the position of line manager has no prestige and why people with a higher technical education strive either to go to scientific research institutions or to work as ordinary workers."

"The Prolonged Stage of Adaptation"

Many readers name the methods of training specialists in administration as one of the serious reasons for the shortage of qualified organizers.

"There would not seem to be any problem. If there are not enough specialists of one kind or another, occupational training should be organized for them. At least this is what they do when there is a shortage of engineers, economists, agronomists and so forth. Why are there doubts about this method when it comes to forming management personnel, and why is it sometimes rejected altogether?" writes the head of the head of the personnel administration department of the Vologodsk Dairy Institute, G. N. Drozd. "It seems to me that the stage of adaptation for occupational training of managers has been somewhat prolonged. One of the participants of the EKO 'round table' in Novosibirsk made this statement: 'Managers with the ability to think strategically are not born all at once.' Absolutely correct. But what does this mean? That managers need special training. When the production manager is educated by life, bypassing professional training, his knowledge and ability to manage are determined by his level of common sense, where strategic thinking is not the rule, but the exception."

A reader from Omsk, V. Markeyev, agrees with him: "The manager should have profound knowledge in the areas of law, economics and organization of production. It is no wonder that many management positions in foreign firms are held by lawyers and economists. Apparently this experience must be taken into account when organizing the training of production commanders."

A candidate of economic sciences and docent of the Novosibirsk Institute of the National Economy, G. P. Zagvozdina in her letter gives interesting data from an investigation of the structure of line managers of machine building enterprises of Novosibirsk (according to the reference book "Unified List of Positions," the group includes directors of enterprises, their deputies, shop chiefs and their deputies, foremen and senior foremen). "In positions of line managers of the enterprises that were investigated," writes G. P. Zagvozdina, "there were no specialists with an economic or engineering-economic education. These positions were held exclusively by specialists with an engineering-technical profile -- technologist, designer, mechanic, and so forth. But the range of functions performed by them requires knowledge of problems of economics and administration."

The initial stage of training for management is a VUZ education. But in order to make it more effective, "it is necessary to introduce legislatively a new

course in the program of the VUZes," suggest some; "to grant the VUZes greater opportunities of regulating standard training programs," add others; "to combine theoretical knowledge with practice: before lunch -- lectures; after lunch 4 hours of work in the actual job of foreman or brigade leader," think still others.

In previous selections of responses (Nos 7 and 11 for 1983) questions of occupational training of production organizers were addressed by the articles of R. G. Galejev, A. S. Sheshnev and V. P. Lyskov. They consider the forms of occupational training of managers who are already holding management posts. Therefore we shall not touch on this problem in this survey. We shall give a couple more suggestions from the readers. A. M. Duz', who is in charge of a dredge of the Lenzoloto Association, writes about how to combine theoretical and practical aspects of training: "One must have temporary duty, but not the kind that is now being applied. That is, I am against having specialists do temporary duty in the positions of managers, for which they are in the reserve, during the time when the main manager is on vacation or a business trip. I support the suggestion that it is necessary to perform temporary duty at the best enterprises with the best managers.

Pay Not for the Position, But for Competence

In many letters the readers raise questions of payment for the labor of managers, especially line personnel of shops and sections, whose wages are considerably lower than the wages of their subordinates. It is suggested that both salaries and the system of material incentives be revised.

"Payment should be made not for the position, but for the level of work," suggests A. I. Duz', "and to do this it is necessary to apply the system of class ratings which they began to introduce for positions of foremen. For example, the chief of a metallurgical shop can be of the first or second rank with the corresponding increment for the position. This increment should be assigned after certification. Thus it is necessary to expand the group of positions that are subject to certification. Now it is limited mainly to the certification of masters."

"Now it is not always materially advantageous to be a manager. Nominally, the difference in the salary of a manager, for example, the head engineer of the plant, and that of an engineer-designer of the first category is about 10-15 percent. But if one takes into account the fact that, as a rule, the quarterly bonuses are reduced for the management of the enterprise, the average earnings of the management workers of the plant and the skilled engineers are almost equal. Yet the difference in the responsibility and the strain on the nerves is obvious to everyone.

Working in a management position with complete exertion of forces and energy and not receiving proper compensation, many begin to be disenchanted. Some people find it within themselves to leave the positions of authority they hold and transfer to work that is less prestigious but more peaceful. But most of the managers work conscientiously and without complaint, bearing their heavy burden. These must be encouraged, if only morally," thinks F. Aykazyan from Leninakan.

The opposite point of view is expressed by the engineer V. K. Serov from Zlatoust. He thinks that the low pay for qualified engineers forces them to strive for any management position in order to bolster their salary. But professional competence is not always combined with organizational capabilities or the ability to work with people. V. K. Serov suggests increasing the horizontal differentiation in the salaries of specialists. This, from his point of view, will make it possible, on the one hand, to be rid of incapable managers, and, on the other, to acquire skilled engineers.

Such are the suggestions and opinions of our readers regarding how to increase the authority and competence of managers and to improve their selection, training and advancement.

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READERS RESPOND TO ARTICLE ON SPECIALISTS IN NORTH

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 104-108

[Response by T. I. Alekseyeva, candidate of architecture, docent, and I. A. Beskin, candidate of technical sciences, docent, Bratsk Industrial Institute, to article by N. A. Denisov, "The Specialist for Siberia. Where to Train Him?" -- EKO, 1983, No 1: "Specialists for 'Northern Use'"]

[Text] According to calculations, each year Siberia and the northern regions must receive more than 100,000 workers with a higher education. It is being taken into account that Siberian VUZes produce about 80,000 of them. The RSFSR Ministry of VUZes has developed a special program which provides for priority development of VUZes in the eastern part of the country and for improving the quality of the training of specialists who are graduated. But the assimilation of Siberia is expanding and the personnel problem is becoming more critical. And it is much more complicated than simply a mechanical increase in the number of young specialists who are graduated from higher educational institutions of this region.

Let us consider how the future specialists are trained and also how it is for those who have come to the North after graduation from institutes in the western part of the USSR.

At the all-union conference on the development of productive forces of Siberia which took place in Novosibirsk in 1980, it was noted the supply of teachers for Siberian VUZes is two-thirds the unionwide level. But even these personnel are poorly attached to the region. Why? Many higher educational institutions of Siberia and the Far East are still small in terms of scientific laboratory equipment and the contingent of students. And the instructors with degrees and titles who are found for them, when they have worked 3-5 years putting up with temporary housing and without their families, move to places that are closer to the laboratories, libraries and proper housing of the large cities that are not in the North. It is bad that they leave. But it is even worse that these "temporary people," willing or unwilling migrants, teach specialists of Siberia and the North -- regions which have been stopping places for them.

In our opinion, the people who should teach in Siberian VUZes are those who have lived in Siberia for more than 1 year, and who are literate not only academically, but also "regionally." Two or three generations will be replaced in the teaching environment before scientific workers who are graduates and graduate students of local institutes and the Siberian Branch of the USSR Academy of Sciences will come to the VUZes. But personnel must be trained today. This means that it is necessary to think about a system of training pedagogical workers, taking regional peculiarities into account: courses for retraining, seminars, schools and other available forms.

The training of personnel for work in the North and Siberia is complicated also because this region includes territories with such different natural and geographical conditions as the subarctic area and tundra, mountains and taiga. Some regions specialize in extracting gas and petroleum, others -- coal and polymetallic substances, and still others are rich in forests. But regardless of which aspect of the assimilation of the North, and this means also training of personnel, one may take, there is a crucial specific feature everywhere. Added to the peculiarities of climatic adaptation, which for the newcomer sometimes lasts up to 3 years, there are also the inadequate facilities for living, the peculiarities of labor and its organization, the entry into the collective, and so forth. Medical experts are already dealing exclusively with medical problems of the North, and a good deal of experience has been accumulated. But this is in the system of science, and VUZ training of medics for work in the North is only beginning to be developed.

One of the main problems of assimilating Siberia -- retaining personnel -- begins with concern for people. As the research of sociologists shows, workers abandon this region mainly because of incompetent solutions to problems of labor and living by those managers who regard all people who come to these areas as transients and think that "the North will write everything off." The all-conquering "vremyanka" is the severe virus of the legacy of past decades.

But far from all of them turn out to be temporary: having arrived for a short period of time, some of them live here for 10-20 years. People become accustomed to the North. But technical equipment cannot "become accustomed." Nothing will reconcile metal that is not resistant to cold weather, ordinary rubber, plastics and concrete to the low temperatures. Here there is something special about everything: construction, transportation, planning apartments and entire cities, organizing the production and social surroundings of populated areas, and so forth. How are these things taken into account when training specialists?

More than half of the disciplines in which "middle latitude" engineers are training have their northern aspects. They do not exist only in higher mathematics, physics and descriptive geometry. So if we say that special textbooks are needed, of course they would not be "Physics for the North" or "Electronics of the Sub-Arctic Regions," but books such as "Technology for Construction Under the Severe Conditions of the North," "Operation of Automatic Machines in the North," "Specialized Transportation for the North," and so forth. We repeat that we do not need new disciplines in the training

plans, but regional interpretation of them. Such textbooks are being written, and, moreover, some of them have been written. But their publication is hampered by the demand: "Indicate the discipline in the training plan and the planned number of class hours." And there are no such subjects in the plans!

The Bratsk Industrial Institute has tried out special courses called "Specialized Transportation for the North" and "Regional Peculiarities of Transport-Construction Assimilation of Siberia and the North," and they have written training plans. But these are still the "premature" fruits of enthusiasm which one can either take into account or forget about, which is typical of the leaders of certain young VUZes that have been recently created in Siberia and are far from an understanding of the local problems.

And yet the successes in Norilsk and Bratsk, Magadan and Mirnyy as well as many other impressive achievements in the assimilation of the North show that there is something for the future specialist to study. An immense amount of experience has been accumulated by more than one generation of engineers, builders, economists and so forth. Time is passing and many of them have a well-deserved rest coming, but there is nobody to whom to pass on their invaluable experience.

There is a critical need to transfer all the experience in assimilation that has been accumulated to books and articles, GOST's and SNiP's, methodological instructions and reference books. Who will do this? Those who have the necessary scientific potential, the ability to select what is major and weed out that which is of secondary importance. Writers and journalists have already done a good deal. Just take a look at the books about the North of L. Shinkarev, A. Levikov, Yu. Polukhin, A. Pristavkin and others. The works of the first two authors are written on the level of serious research and are better than textbooks for teaching. But it is precisely to textbooks that this immense wealth of knowledge should be transferred by instructors of VUZes, workers of local scientific research institutes, and extremely experienced managers of productions construction projects who are completing their activity in the North.

It is also necessary to understand this fine point: if the textbooks in theoretical disciplines are slow to become outdated, in the applied disciplines, especially technical ones, they become obsolete while still on the desk of the writer. By the time they reach the student they have become obsolete twice over, and by the time the graduate comes to production -- this information is archaic. We need an efficient transfer of information.

Unfortunately, future specialists (mining engineers, builders, transportation workers and so forth) are still being trained according to standard training programs -- the same ones for the entire Union. But here a graduate of a Moscow, Leningrad or Voronezh VUZ, who has served his internship somewhere near Kursk or Penza, is sent to a job in Norilsk, Neryungri, Urengoy or Uoyan -- areas about which he knows only from posters or songs. Speaking in modern language, the system of training and education instills a certain program in each of us. When are we satisfied and comfortable? When the environment makes it possible to live and act in keeping with this program. And in the

North the "middle latitude" specialists experiences a constant conflict between what he has learned in training and reality.

And then, without even having become accustomed to the circumstances, frequently making stupid mistakes, acting against the pangs of conscience, within 3 years if not sooner, he returns to nice and comfortable Penza. But it is much worse when such specialists actively begin to make decisions to "conquer" the region from the standpoint of their own knowledge in general and their ignorance of the North in particular. They think approximately as follows: "We are not here for long, we will construct a GES, mine diamonds, earn money to fulfill our dreams -- and then home!"

But we need the North to be alive for a long time.

When and where should we transfer the experience and the program for assimilation to the young specialist who has been sent to Kodinsk, or the Komsomol members who are going to work on construction projects in Siberia or the Far East? Obviously, when they enter the regions of the North, in Bratsk, for example. It is necessary to organize a year, or at least 3 months of probation. During this time the teachers of local VUZes and experienced production managers and practitioners who have worked for many years in the North can explain the fundamental regional peculiarities in lectures and using clear examples. The newcomers will go through the first phase of their acclimatization here, myths will be dispelled and they will become more confident of themselves. Such "northernization" of youth, in our opinion, can be conducted expediently within the framework of the system for increasing qualifications for the middle technical and worker level and probation for specialists with higher education.

But what will happen to those who have already been working in the North for several years, but are discovering it by the method of taking their own bumps and bruises? Here too is a well travelled path -- the system for increasing the qualifications of engineering and technical personnel and schools of advanced practice. It is essential for this system to operate locally, in the North. It is no secret that Northerners are sometimes unwilling to go for increasing qualifications, even to Moscow, since the wage differentials for the North are not paid during this period, and the knowledge that is transmitted there is on the level of general statements.

Certainly not the last issue: what kinds of specialists should be sent to Siberian and Northern VUZes? They need mass occupations for assimilation -- engineers, technologists, miners, economists, and so forth. And for the occupations that are necessary but are not characteristic of the North and are not mass occupations, it is perhaps possible to wait. In practice, the number of specialties in small VUZes is increasing unjustifiably. It is frequently impossible to find qualified teachers for them or to create a laboratory base. The appearance of these specialties is sometimes determined not by the needs of the region, but by the initiative of individual instructors. But it is hardly efficient to have 10-12 specialties in institutes with 4,000-6,000 students.

It seems to us that the time has come to create training-scientific-production associations (UNPO), where the accumulated knowledge would be transferred directly to the future engineers by those who know Siberia and the North not from books, but, as they say, by touch. Bratskgesstroy, for example, has gathered together excellent builders, transportation workers, hydraulic technicians, energy engineers, technologists and so forth. But they are enlisted for training only from time to time. The most valuable experience, we repeat, is with personnel. It is wasted if it is not utilized, if a specialist is put on a pension without being offered the opportunity to transfer his knowledge to youth. And these associations should be created on the basis of such giants of assimilation as Bratskgesstroy or the Norilsk Mining and Metallurgical Combine. To head the UNPO's we need people who understand and know production, those tasks which science should formulate and those requirements which should be placed on the VUZ graduate.

In conclusion let us recall a long confirmed truth: every ruble invested in education is returned 10-fold.

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POSSIBILITIES OF COMBINING LABOR AND EDUCATION SURVEYED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 109-110

[Introduction to articles that follow: "The Productive Labor of School Children"]

[Text] The June (1983) Plenum of the CPSU Central Committee called upon us to follow a steady course toward instilling in school children habits and love for useful labor. This can be physical or mental labor, but it must be real -- productive labor that is necessary to the society.

In EKO No 12 for 1983 we began a discussion of the problems of a possible restructuring of the education system. We were speaking about improving the organizational structures of the system of education, improving the quality of education and overcoming legal obstacles to combining school and work. Today we are concentrating our attention on the question of the productive labor of school children.

It is impossible to imagine an ideal future society without a combination of study and productive labor of the younger generation: neither training and education without productive labor nor productive labor without training and education could place us at that height which is required by the modern level of technical equipment and the condition of scientific knowledge.

V. I. Lenin

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VARIOUS ASPECTS OF LABOR AND EDUCATION DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 110-129

[Article by I. P. Sidorenko, engineer (Kiev): "Labor and Education"]

[Text] A love for labor and the ability to work professionally comprise the spiritual core of the personality, and all other human qualities are formed around it and attached to it. K. Marx believed that the time would come when "for all children above a certain age productive labor would be combined with education and physical training, not only as one of the means of increasing public production, but also as the only means of producing people who are developed in all ways."*

By keeping school children away from all kinds of labor (from domestic to industrial), concentrating their interests, forces and demands on school and mainly book training, and by making childhood excessively carefree and irresponsible, we thus deform this core of the human essence of our children.

Every year millions of yesterday's school children who have not entered the VUZes to which school, fashion and their parents have directed them, and not having a working occupation, end up unprepared for independent life, and many of them experience the breakdown of their ideals and plans as a personal tragedy.

The Family and Labor Education

And this conflict originates in the families. But why? After all, it is known that the from time immemorial the family has been the generator and protector of labor traditions. What has happened to all this? Does the family still maintain its traditional significance as the citadel of labor education? From where comes the threat of consigning the primary role of labor education to oblivion?

*Marx, K. and Engels, F., "Soch." [Works], Vol 23, p 495

Family traditions and buttresses are not disappearing of their own accord. Long years of effort are needed to destroy them. One of the most important achievements of the Soviet system -- mass public education of children in kindergartens and schools (that is, away from their parents) -- also has its reverse side: it weakens the ties between children and their parents and deprives them of the opportunity for constant communication and joint labor.

During the past two decades the following kinds of parental questions-complaints have become widespread:

"Why should my child, who at a young age showed an inclination for music (drawing, mathematics, physics, dancing, sports and so forth) have a working profession? After all, he is going to be a musician (artist, scientist, performer, sportsman, engineer and so forth). Why should he waste all that time at the construction site, in the shop or on the kolkhoz field?..."

"My wife and I have worked hard all our lives (bent over a machine tool), our hands have become calloused and we have denied ourselves everything. At least let our children be delivered from this, and live a clean and carefree life..."

There are other variants of such utterances, but their essence is the same.

Our grandparents and great grandparents were not ignorant about training and education. They understood that with disdain for material production one cannot develop a fully valuable worker. "If you want your children to be happy, teach them to work."

Whether a person becomes a musician, a scientist, a diplomat, a surgeon, an administrator or an educator, his path should inevitably pass through a certain period of mandatory labor in the material sphere. He must know the value of it, and from childhood he must have a sense that labor alone is the source of proliferation of the national wealth. The society can only dispose of what it has produced. Everything it eats, drinks and wears originates in the material sphere, and it is everyone's duty to strengthen it.

A Labor Occupation for the Teacher as Well

Decisions in material production should be made only by competent people. It is difficult to disagree with this. Yet more and more people who do not have experience in productive labor are being called upon to make these decisions. The roots of this also go back to education. And above all pedagogical education, which not only does not provide labor occupations for teachers, but does not even familiarize them with production. As a result, our polytechnical schools are trying to give children a labor education, to instill in them a love of labor occupations with the help of teachers who do not have the proper idea of it. Special teachers of labor are brought in. But the majority of them do not have a pedagogical education, and the level of their culture is not always high enough.

There is a similar situation when it comes to the training of educators for the system of vocational and technical education, which until recently did not have a single higher educational institution of its own. The rector of the first engineering-pedagogical institute in the country (opened in 1979 in Sverdlovsk), V. V. Blyukher, says regarding this: "Today the GPTU has two categories of mentors -- teachers of theory and masters of production training. The former, who have higher education, only conduct lessons in classrooms and give lectures. The latter only deal with the students in the shops. Thus it is as though the break between theory and practice were embedded in the structure of education itself. Frequently the masters can assimilate the rudiments of pedagogy only empirically. They have not mastered training and education methods or the fundamentals of age-group psychology. And they have not been prepared for the complicated role of the educator. But it is not enough for the present-day mentors of future workers to have the traditional engineering-technical education.

The position of the USSR Ministry of Higher and Secondary Specialized Education is alarming. Its workers stubbornly insist that the institutes, including ours, are to train only teachers of theory; producing masters of production training is not the business of the higher school. They typically try to realize these views in training programs for engineering and pedagogy departments that exist in several of the country's technical VUZes.*

V. V. Blyukher has travelled the path from a rank-and-file worker to the general director of the extremely large Uralelektrotyazhmash scientific production association, and he has a profound understanding of industry's needs for labor personnel. Therefore the work is arranged in a new way in the Sverdlovsk Engineering-Pedagogical Institute. In addition to technical and special subjects, the students are taught general humanities disciplines, the fundamentals of general and occupational pedagogy, psychology, Soviet legislation, modern educational methods, and occupational training. But in addition to this each graduate also receives a labor specialty -- below the fifth production category. Otherwise what kind of mentor would he be?

The history of pedagogy is filled with examples of bitter disenchantments and crushing failures of many educators who have tried to combine training with daily labor of the students and to turn the school into an autonomously financed enterprise. What are the reasons for their failure? One of the main ones for the majority of enthusiasts, in our opinion, is their own lack of training in effective labor methods and the fundamentals of production and commerce. Even Pestalozzi ended up on the brink of ruin more than once because of his helplessness when it came to production and commerce. And only by acquiring the necessary experience in a stubborn, literally fanatical surmounting of his failures, did he achieve remarkable success. Makarenko encountered similar difficulties. And if he had not met the enterprising businessman B. S. Klyamer, who had learned his ABC's production and commerce and took on all production concerns, the world might not know about the unique experience of combining education and training with highly productive labor in the Commune imeni Dzerzhinskiy.

*SOVETSKAYA ROSSIYA, 22 April 1982.

Without a radical reform of labor training of the teacher, the school will be a labor school only on paper. One must say that as early as the decree of the Central Committee of the All-Russian Communist Party (of Bolsheviks) of 5 September 1931 in the section entitled "Basic Tasks of the School" public education agencies were given the assignment for 1931-1932 of familiarizing the teachers with the fundamentals of production at plants, on sovkhozes and kolkhozes, and machine and tractor stations; and students of industrial and agricultural VUZes -- with the pedagogical problems of the polytechnical school. In 1936 in her "Draft of the Report to the Central Committee of the All-Russian Communist Party (of Bolsheviks)," N. K. Krupskaya stated that the aforementioned decree was not being implemented and suggested "creating a program for pedagogical tekhnikums and pedagogical VUZes, where labor training would be mandatory."* The draft of the CPSU Central Committee concerning the reform of school education again makes it crucial to raise these issues.

Training, Health and Labor

Training methods in the schools have been essentially the same for centuries. The quantity of material that is studied has increased several fold, and the loads have increased correspondingly. Secondary education is now compulsory. It would not be stretching the truth to say that training in schools is not the least important of the factors of modern civilized life which have caused deviations from age norms in the condition of the students' health.

Opponents of combining labor and education refer to the fact that with increased labor training the adolescent will have a 14-hour work day: 6 hours of classes, 4 hours, say, of work at the post office, and 4 hours on homework. They seem to forget that many school children already spend almost this much time on school alone. Here are the norms that have come about for the duration of socially useful labor of students in general educational schools: grades 1-3 -- 20 hours a year, and grades 4-10 -- 50 hours (from a circulating letter of the Ministry of Education). Only 10 days with 2 or 5 hours of work during the entire year. This is hardly enough!

And the length of the work day in and of itself does not cause harm to the health. It is all a matter of the kind of work the person is engaged in. A small child is on his feet doing things from early in the morning until he goes to bed at night, but he never gets tired and his health does not suffer because he immediately abandons things that bore him and takes up something new, that is, he instinctively follows the law of changing activities.

Even Marx pointed out that changing activities, regular daily alternation of school and mental activities with productive labor and gymnastics doubles the productivity of both. And if this alternation is augmented by sports, art, games and so forth, and new highly effective methods of education and training are added, then the children's successes at both work and school will be even greater. Moreover they will grow up to be happy, healthy and strong. One could even reduce the number of class hours without harm to the training.

*Krupskaya, N. K., "Pedagogicheskiye sochineniya" [Pedagogical Essays], Vol 4, Moscow, 1959, pp 570, 573.

The Major Obstacle

The new USSR Constitution put an end to discussions of whether or not to combine training with productive labor. Article 42 of it permits students to engage in any kind of labor if it is related to training and education and is not counterindicated by health considerations. It is now a matter of realizing this article on the legislative and organizational plane.

But we are encountering many difficulties here. In our opinion, the main ones are the training methods which are incompatible with productive labor, which now prevail at all levels of rearing and education (the family, the kindergarten, the school, the vocational and technical school, the VUZ, graduate school and the system for retraining of personnel).

Today the programs, textbooks, methods and devices for labor education are developed in pedagogical scientific research institutes by pedagogical scientists who have come from the same schools or pedagogical VUZes and, as a rule, have very rough, bookish ideas about production and the labor professions. And all this is controlled by the administrative staff of the Ministry of Education, the majority of whom have travelled exactly the same life path far removed from production. Yet the modern condition of mass education exists side by side with highly effective methods of training and education: the Nikitin system of early family development, tempering, training and education; the Kravets method of early preschool development and training; the methodological system of development, training and education for younger school children of Amonashvili, Lysenkova and Zankov, and for both older and younger -- of Sukhomlinskiy, Shatalov, Sokolyanskiy-Meshchryakov-Apraushev; the system of esthetic development and education of Kabalevskiy, Nemenskiy and Shevchenko; the comprehensive system of labor, esthetic and physical development, education and training of Shchetinina; the methods of labor and technical education and training of Karmanov, Berman and Kuryndin; the advanced experience in education and training of Tkachenko, Sheyubov, Mishle, Il'in, Masonova, Ivanov, Volkov, Portugalov, Mikhaylov, Erdniyev, Kapishnikov and many others; the suggestive cybernetic method of training; problem and programmed training; the Gal'perin system of stage-by-stage controlled formation of mental activities; the Lipetsk method of intensification of training; the Tallinn experimental 5-day training week; Naumov's training algorithm, and others.

The history of the Soviet school includes the remarkable experience of the Makarenko commune, which is still timely today, the first experimental station of Shatskiy and dozens of other public education stations of the RSFSR People's Commissariat of Education, and the experience of Blonskiy, Pepeshinskiy, Pistrak, Soroka-Rosinskiy, Rivin and many other educators of the 1920's and 30's.

No other country today has such a rich constellation of names of outstanding innovative educators or such an abundance of excellent pedagogical experience. Its extensive scientific generalization and introduction into mass practice of education can make a radical change in education and training. But the treasures of practical pedagogy cannot become the property of the

masses during the course of decades. Why? Of course, everything new experiences more or less resistance. This is partially brought about by naturally conservative thinking, customs and opinions. It is inevitable in training and education where hasty actions have never led to success. But in this case one must look for the explanation not so much in this natural peculiarity of human nature as in the position of education departments, which stubbornly refuse to take note of the experience of pedagogical innovators and their methods. Suffice it to say that the experience of Sukhomlinskiy, the Nikitins, Shatalov, Amonashvili, Zankov, Kravets and others has been around for more than 20 years now, and the experience of Blonskiy, Shatskiy and Makarenko -- for more than a half century.

It has long been time to bring methods of training and education in line with the content of education and the requirements of life. This task was raised in particular for the education departments in the decree of the CPSU Central Committee and the USSR Council of Ministers of 22 December 1977. At the June (1983) Plenum of the CPSU Central Committee one heard again, with special force, the appeal to consistently follow Leninist principles of a unified labor polytechnical school, to instill in young people a love for socially useful labor, and to expand their ideological horizons, developing above all the high qualities of a citizen of the Soviet society, an active builder of communism. After the publication of the CPSU Central Committee draft concerning the reform of school education, the nation began to discuss it with interest.

The "Chayka" Plant

The Chayka school plant has been in existence in Moscow for 20 years. Its outstanding achievements in occupational orientation and labor training and education of school children are widely known in the country and abroad. This is simultaneously an industrial enterprise and a pedagogical institution which produces products and engages in labor training and education of 5,000 children from more than 30 Moscow schools.

"The structure of the plant administration includes the positions of deputy directors for production training and training-educational work, and all the training shops have positions of deputy shop chiefs for training and educational work."* The school children produce small electric engines, transistor radios, transformers, elektrodynamical loudspeakers, variable capacity condensers, sewn items, soft toys, and various printed products. Of the 900 plant technological operations, 470 are performed by the school children. Moving regularly from one operation to the next, they master the entire technological process. And by participating in production planning, competition, and management of labor and production, they receive in practice a fundamental knowledge of modern industrial production, economics, cost accounting and the structure of the plant. Upon completing the plant training each school child takes a qualifying examination and receives a certificate of his mastery of a labor rank.

* Here and henceforth quotations and figures are taken from the book: Alekseyev, S. N., Semykin, N. P., "Mudraya shkola truda" [The Wise School of Labor], Moscow, "Molodaya gvardiya", 1981.

Moscow enterprises are glad to hire these school children. And how! For during the course of the examination, in addition to purely technological questions, each student must be able to demonstrate his knowledge in the following required subjects: "Principles and problems of planning," "Technical and industrial financial plans of the industrial enterprise," "Long-range and current plans," "Main indicators of the shop plan," "Concepts of gross and commodity output," "The concept of labor productivity," "Principles of scientific organization of labor," "Technical norm setting for labor," "The structure of administration of industrial enterprises," "The concepts of fixed and circulating capital," "The essence of the economic reform," "What is autonomous financing?" and so forth.

The school children regularly receive wages at piece rates. They are organized into 349 student production brigades of 12-17 people each. The brigade leaders are selected by the children. And they do this very carefully, much more carefully than they do the school public activists. The children understand that their own school self-management is in no small measure a game in which the "select only the excellent ones." This irritates the rest of them and causes protest and indignation. On the other hand, the excellent students and those who are making good progress frequently feel that they are in a kind of elite school. A sense of superiority is established in them: it is enough to be a good student in order to be an over-achiever in everything else as well. Approximately one-third of the children are never selected for anything during the whole time they are in the school, and during their school years they never experience the feeling of satisfaction that is derived from the confidence of one's comrades and their attention.

At Chayka self-management is not formal, but actual. "As practice has shown, the excellent students and activists in public affairs who are selected to be brigade leaders are not always so successful at coping with production responsibilities. The organization of productive labor at the Chayka plant places qualitatively new requirements on them: they must be best in their work, be able to handle technical equipment and industrial technology, master many practical skills and tricks, and manage delicately, skillfully and correctly the interrelations in the collective and at work, which are principally different from class studies."

At Chayka the children do not play at work. Every brigade of school children has a clear-cut state plan for the output of products, which are delivered to 128 cities of our country as well as to Bulgaria, Czechoslovakia and Hungary. For example, the annual plan for the student brigade of the electrical equipment shop in the 1979/1980 school year was for 16,000 engines -- more than 1,000 per student.

With the profit received by the school children alone it would be possible to construct several such plants as Chayka (it is housed in the four-story building for a former boarding school), and the value of all the products produced by the school children during 20 years would be equal to the value of several dozen Chaykas.

Research has shown that work at the plant considerably increases the children's success rate of in physics and mathematics as well as their overall

activity. They select their future occupations more carefully. The plant director, V. F. Karmanov, and his colleagues love the children and give them all of their hearts, minds and souls.

The authors of the book that was quoted devoted it completely to advanced practice in labor education. Having extensive information at their disposal (N. P. Semykin is the former director of the Scientific Research Institute of Labor Training and Vocational Orientation of the USSR Academy of Pedagogical Sciences), they think that there is no more successful experience in the country than that of Chayka. Nor is there any more successful experience in other countries either. This is shown by numerous remarks from foreign specialists. Thus the general director of the UNESCO international bureau of education, L. Fering, wrote in the book of remarks: "The problem of the link between school and production is one of the most serious problems we encounter. The Chayka experimental plant is one of the most interesting solutions to this problem." Newspapers and magazines have been writing about this enterprise for more than 18 years, and it has been discussed on radio and television. Everyone agrees with the opinion that Chayka is a unique production-pedagogical phenomenon, a continuation of the experience of S. A. Makarenko under modern conditions.

The reader has a right to ask, "How is the Ministry of Education dealing with this 'miracle'? How is this remarkable practice being disseminated? How many other such school plants have appeared in the country in recent years?" Unfortunately, one can give only negative answers to these questions. The practice is not being disseminated, Chayka remains the only one, and, moreover, for many years it was on the brink of being eliminated.

All these years Chayka was under the jurisdiction of the administration of personnel and training institutions of the Moscow Gorispolkom, and not under one of the industrial ministries.* This is where its misfortune begins, because the plant must solve all the main problems of material and technical supply, cooperation, development and modernization of production through its own forces. And, after all, these are the main problems in the activity and the very existence of any enterprise.

For many years Chayka stayed afloat only because of the desperate efforts of the directors and the plant collective, and also the many volunteer assistants they have acquired over the years. If they had taken the same kind of formal attitude toward their business as others take toward them the plant would have gone under within months. But their example is excellent evidence that enthusiasm, talent and love for one's business constitute a mighty force in and of themselves. All of Chayka's profit is taken and deposited into the budget, while many other pedagogical institutions can legally spend all of theirs on their own needs. It would take a long time to list all of Chayka's problems. Anyone who is interested can do this for himself by leafing through the pages of the central newspapers.

*It was recently announced (SOVETSKAYA ROSSIYA, 12 June 1983) that the Chayka plant has been transferred to the RSFSR Ministry of Local Industry.

It would not be especially difficult to solve these problems: transfer the plant to the jurisdiction of an industrial ministry (this has already been done), stop taking away the profit, reduce the number of schools assigned to it, begin the labor training in grades 6-7, and increase the number of work hours for school children so as to reduce the kaleidoscopic changing of shifts of the children (Chayka is still an enterprise and it has a vital need for at least minimal stability of personnel who consist mainly of school children), give more freedom for creativity and expansion of experimentation, and so forth.

From the standpoint of common sense, the most interested party in this matter is the Ministry of Education. But formally Chayka is not under its jurisdiction, and it turns out that it does not need it. It has its own industrial training combine, school production brigades, camps for labor and recreation, school shops and pioneer camps. They have enough problems with them. And it turns out that the children are the only ones who need Chayka. But what can they do?...

Industry of the Ministry of Education

What does this industry look like?

Training-production complexes and school shops. The first industrial training combines (UPK) appeared 10 years ago. School shops appeared much earlier. There are now more than 2,000 UPK's in the country and there are shops in secondary school and in the majority of 8-year and incomplete schools. In essence they are small enterprises, supplied in one way or another with industrial equipment, and staffed with production, service and auxiliary personnel and masters of production training. Thus in parallel with industry we have created a special school industry. It is called upon not so much to produce products as to familiarize the school children with the fundamentals of production, to prepare them for an intelligent selection of an occupation, and to provide labor training.

UPK's and school shops are created with money from the public education divisions (ONO) with shared participation of the enterprises. They staff them on the same basis, and give them equipment and raw and processed materials. The results of the educational and occupational orientation work of these schools of industry, as a rule, leave something to be desired. The usual UPK's and shops typically have a low level of production, are poorly provided with skilled personnel, equipment, raw and processed materials, and technical service, they manufacture unnecessary products, and they turn raw material into wastes. The school children work without any special love or interest, and in the majority of cases they select occupations that are quite different from the ones in which they are trained. Such results could have been expected from the very beginning, for they lie at the very basis, in the very structure of school industry.

But where should children be trained for labor? It seems that it should not be in an artificially created school industry, but at specially selected advanced modern plants. There is an abundance of these enterprises today, both in the cities and in many villages. There are enough of them for

pedagogical training, but this does not require the immense expenditures that the creation of a UPK does. In the extreme case the money could be spent more effectively not by constructing new UPK's, but by preparing selected enterprises. And in the most extreme case it would be much more reasonable to use it for expansion and modernization of the industrial training base of the vocational and technical school where children are sent for labor training. True, the interests of two different departments collide here -- the Ministry of Education and the State Committee for Vocational and Technical Education. And, finally, if independent UPK's have already been created under the jurisdiction of the ONO, one should carry out a simple reorganization, which would immediately remove the majority of the tormenting problems: transfer the UPK to the jurisdiction of industrial enterprises with the status of shops, and the ONO and the schools would be left with purely pedagogical functions. And exactly the same thing should be done with school shops. For it is precisely this that is suggested by Chayka's 20 years of experience, which cannot be compared with a UPK in terms of effectiveness. Such a reorganization would signify an important step toward the dissemination of this experience.

In addition to organizational disorders and the production and educational disorders caused by them, there is one more essential peculiarity which practically nullifies all the efforts of the UPK's. We are speaking about the fact that only students of the ninth and tenth grades are enlisted for labor education and vocational orientation in industrial training complexes. And, as experience shows, the majority these school children are definitely bound for VUZes. At this point they do not need any working occupation or labor education.

This tendency is clearly manifested even at Chayka. A special investigation was conducted here and it was revealed that the older, the more educated and the "smarter" the children, the less frequently they wish to engage in productive labor. The overwhelming majority of tenth-graders prudently declare that it is enough for them to engage in labor once a week. Almost one-fourth of them are not capable of working even an hour. They want to stop working as soon as they have arrived. Only two out of every hundred tenth-graders are prepared to work at the plant every day. "It is better to deal with lessons of labor in school shops and laboratories," think 23 percent of the senior classmen and only 6 percent of the children in the eight grades. The rest prefer the school plant.

Why do one-fourth of the tenth graders like working in the school shops better? It turns out that it "takes less time," "we do not do much work there," "it is necessary to keep up with the plan," "it is less tiring," "there is less responsibility," "it is not necessary to attend class so often and one can skip class with impunity," and so forth.

In addition to the good organization of labor and the development of the production and pedagogical process, Chayka has one other indisputable advantage over the UPK in that along with ninth and tenth graders, eighth graders also work there. But its pedagogical successes would be much greater if children in grades 5-7 were working along with them. But the Ministry of Education does not permit this yet. For anybody: neither Chayka nor the UPK.

There are, no doubt, also highly effective industrial training complexes and school shops. But this hardly contradicts our conclusions. As in the case with Chayka, they show that talented, conscientious, skilled people can achieve success which is beyond the power of the majority. But this success is achieved, as a rule, at the price of incredible effort and hard work.

The situation with the UPK's and school shops reminds us of the situation where, parallel to the ordinary school network, the VUZes create their own training courses, faculty and consultation points, and so forth, that is, in essence a "second" school network, independent of the Ministry of Education. In a number of VUZ cities tutors are spreading their "net," actually forming a special kind of private industry (see SOVETSKAYA ROSSIYA, 4 January 1984). Both of these networks (VUZ and tutor) augment school training.

What do these shortcomings in school industry cost the state? Unfortunately it is difficult to conduct a serious economic analysis of its work because of lack of the necessary information. The following data provide an approximate idea: in 1981 in the schools of the Ukraine there were 4,777 work rooms with equipment for labor training of junior school children, 11,000 training shops for wood working, 11,000 for working with metal and 6,000 combined shops, 10,000 offices for service personnel, and 70 interschool production shops.*

If one assumes the average area of one shop to be 60 square meters, their overall area will amount to 2.3 million square meters, which is equal to the total production space of 25 large machine building plants. And the area of the 449 interschool UPK's that are in operation in the republic (1.5 million square meters) is nearly equal to the area of 17 machine building plants.

In just a few years before 1981 schools of the Ukraine received 36,000 metal working and 33,000 wood working machine tools, and 59,000 sewing machines in addition to those they already had.

Let us try to make an estimate. A new UPK costs about 700,000 rubles. (For example, the UkrNIIP Grazhdanel'stroy in 1977 developed a plan for 200 spaces. Its estimated cost was 720,000 rubles, including construction and installation work -- 459,000 rubles and equipment -- 263,000 rubles). If it were located in an adapted building, the expenditures would be reduced to 200,000-250,000 rubles. We shall take the average cost of one UPK as 300,000 rubles, so that 2,000 of them will cost 600 million rubles. If we had the data for the expenditures on maintaining one UPK a year, then (knowing that they operate at a loss), it would be possible to calculate the losses during the years of operation of the UPK. But even without this information it is not difficult to guess that the state has spent billions of rubles on constructing, equipping and maintaining the UPK's. If one adds to this the expenditures on the creation and maintenance of school shops, even taking into account the profit that is made by the best UPK's and shops, we receive large sums of losses. It is more difficult to calculate the losses related to morale, and the moral, psychological and educational losses.

*"Narodnoye obrazovaniye i pedagogicheskaya nauka v Ukrainskoy SSR k desyatoy pyatiletke" [Public Education and Pedagogical Science in the Ukrainian SSR by the 10th Five-Year Plan], Kiev, "Radyansk'ka shkola", 1981, pp 168, 169.

Camps for labor and recreation of school children. They are created, as a rule, near villages, mainly through the efforts of and with money from city enterprises and organizations with some participation from the sovkhozes and kolkhozes. They are maintained at the expense of the city organizations, kolkhozes and sovkhozes, and partially with funds from schools, public education divisions and local soviets. They belong to the sovkhozes and kolkhozes, the city enterprises ... or to nobody. Frequently after the construction is completed nobody wants to take the camp onto its books. It ends up ownerless. There are many ownerless camps. There has been a tug of war among various departments for many years: who will take charge of them?

About 10 years have passed since these camps began to be constructed, and there are thousands of them in the country. It is time to sum up the results. When it comes to education and health they have undoubtedly been advantageous for city school children. The children live out in nature for two or three weeks, do physical labor in the fields or orchards for the first half of the day, and they rest during the second half. In places where the work is well organized they also produce an appreciable advantage for the economy. But today the sovkhozes and kolkhozes are short not only of auxiliary labor force, but of skilled labor force. If the city school children, especially the older ones, were able to drive a truck, work with metal, handle electrical equipment and so forth, they could help the rural machine operators in the shops and on the farms. But one can only dream of this. So far the children are frequently not able to repair a socket or electrical wiring in the camp.

By locating the camps outside villages we deprive the city children of the opportunity to become familiar with rural life, customs and traditions and to visit sovkhozes and kolkhozes, farms, machine operators and rural schools. Immense potential educational possibilities of familiarizing city school children with the country are not realized. Moreover, even in the fields the children do not work alongside of adult kolkhoz workers. In the camps themselves they work, rest and live separately, according to age groups. From this it is clear how little the educators are concerned about drawing the maximum pedagogical return from the city school children's visits to labor camps.

Of course one can find examples in which the pedagogical activity of these camps is organized effectively. But these examples do not improve the overall picture very much.

Even with all of this the educational side of the organization of camps for labor and recreation does not produce such a depressing impression as the economic side does. Of course, with the present level of labor training of school children, one can hardly count on having their labor in agriculture pay for the cost of construction, equipment and maintenance of the camps, thus making them profitable. Training and education require large nonproductive expenditures which, however, subsequently product an immeasurably greater spiritual, intellectual and economic return. And the more effectively these expenditures are utilized and the better the training and educational process, the sooner and the more abundant the return will be. Hence the state spends immense amounts of money on training and education.

All this is so. But it certainly does not mean that absolutely insane amounts of money can be spent for these purposes. When initiating such a immense and costly business as creating thousands of camps for labor and recreation, the Ministry of Education was obliged to conduct an economic accounting and justify the reasonableness and effectiveness of the planned expenditures. "In the Ukraine there are about 600 of these new construction projects. If one puts the average cost of one camp at 300,000 rubles, the overall sum in our republic alone will amount to about 200 million rubles, and in the country as a whole -- billions. Is it really reasonable to make colossal capital investment and expend an immense amount of labor so extravagantly on the construction of installations which, with extremely unsatisfactory operation and annual repair, are utilized for 3 months? At the same time in each village there is a school which frequently does not have a proper dining room or stadium. And in the environs of these villages we are creating structures which for 9 months of the year are not needed by anybody, stand empty and deteriorate. It would obviously be expedient to place the camp facilities to the territory adjacent to the rural schools."*

The situation as a whole is the same as with the UPK. The money and efforts expended on the construction of individual camps for labor should be utilized for modernizing and adapting rural schools for these purposes. For during the period when city school children are doing agricultural work these schools stand empty. As a result, each kopeck spent would produce essentially a double return: both for city and for rural school children. At the same time we would solve the problem of the ownership, operation and maintenance of the buildings and structures. Having the camp in the rural school would greatly increase the educational capabilities discussed above.

Moreover, each camp occupied an average of 3-4 hectares of basically fruitful land, and in the country as a whole this was more than 100,000 hectares. Having the camps in rural schools would save this land for crops.

School student agricultural production brigades. About 30 years have passed since the time of the creation of the first of these brigades. Today there are tens of thousands of them in the country. Almost every secondary and 8-year school has its own production brigade. They have brought an appreciable advantage to education and agriculture. And they could bring even more.

This is quite clear from the practice of the leading production brigades, of which there are quite a few in the country, thanks to the efforts of the best kolkhoz and sovkhoz managers, school directors and teachers. But long ago serious difficulties arose on their path, impeding further development.

Agriculture of today (as distinct from the 1950's-1970's) needs mainly not the subsidiary labor of school children, but skilled labor involving the use of technical equipment which is capable of developing into full-value work. Children are not inspired by odd jobs, according to the principle "pick up, bring and take." They want to cultivate the land like adults, to raise crops and animals, and to work on agricultural equipment, not furtively but by right. That is, the problems are the same as in industry.

*"Who is Master of the School Camp?" -- PRAVDA, 7 January 1981

Having considered the basic forms of school labor education and vocational orientation of industry of the Ministry of Education, we arrive at the conclusion that they are not without serious shortcomings and involve the expenditure of colossal amounts of material and financial funds.

Almost without giving the children any serious work at all, playing at labor with them, by the end of the eighth grade we frequently destroy their interest in physical labor. Upon completing school and taking the program course of labor training, they still do not acquire the habits each person needs for prolonged hard work. Our school children acquire an idea of how to saw wood, to plane boards or hammer them together, to work with metal and to cut and sew clothing. But without performing this work for some significant period of time, according to a strict plan or schedule, they will not acquire even an approximate idea of the labor activity of adults.

Regardless of the figures the leaders of the Ministry of Education may give about their achievements in labor education and vocational orientation, one thing is clear: behind them, just as behind the high percentage of achievement, lies concealed a heap of serious problems. They must be solved. And quickly.

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ORGANIZATIONS FOR INTRODUCTION OF ADVANCED PRACTICE DESCRIBED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No. 2, Feb 84 pp 129-133

[Article: "Destinations of Advanced Practice"]

[Text] The industrial training shop of the Leningrad Optical Mechanics Association imeni V. I. Lenin (LOMO). This is one of the oldest centers in the country for labor education of youth. Today it offers school children a selection of three specialties: lathe operator, milling machine operator, or fitter for machine assembly work. The girls can also acquire the specialty of optical polisher. Classes are held once a week for 4 hours over a period of 16 months (the school year of the 9th grade and three-fourths of the tenth).

While training the students also participate in the fulfillment of the LOMO production program. The training shop has the full status of a partner in intraplant cooperation. Its products go to the other six shops. There has never been an occasion on which they have been dissatisfied with the quality of the labor of the adolescents. But what do the school children produce? Bushings and cylinders, nuts and washers, shafts and axles, lenses for microscopes, light filters, optical mirrors and so forth. Twenty experienced personnel perform the duties of masters of production training. For this work the children receive piece-rate wages that are set for adult workers. They are issued to them at one time at the end of the school year in festive circumstances. The overall amount of wages earned by the school children each year exceeds 15,000 rubles.

The training shop of the Kharkov Tractor Plant. It has been assigned a separate two-story building on the territory of the residential area. Nine independent sections were located in it initially, and now there are 11 of them. In each of them the children become familiar with one specific occupation. A machine tool operator with a broad profile, lathe operator, carpenter, driver, draftsman, controller of the technical control division -- these are some of the specialties studied each year by more than 1,000 ninth and tenth graders from all secondary schools of the rayon. The shop's annual volume of product output is 80,000 rubles. More than 100 kinds of items are produced by the shop, the majority of them on order from the main shops of the tractor plant. Certain sections of the training shop also fill orders from

schools, kindergartens and libraries. The shop has a "firm" item -- a mechanism for automatic drawing of window blinds. It consists of several dozen parts and costs more than 150 rubles. They have enough orders for the mechanism to keep them busy for several years.

For many years about 50 percent of the school children who have trained here have gone to work at the Kharkov Tractor Plant and other enterprises of the city, and 15 percent have gone into the sphere of services, with a considerable proportion of them working in the profile in which they were trained in the shop.

The industrial training shops of Chelyabinsk school No 118. There are carpentry, wood working and preparation sections here, a furnace for thermal processing of metal, and a machine tool for precision electric welding. Their products are used by the Yuzhuralelektromontazh trust, the plant for installation units of the Koksokhimmontazh Union Trust, the Promventilyatsiya administration, the Vtorchermet association, the electrolytic zinc plant and so forth.

What can eighth graders do and where do they prefer to go from school? They are not afraid of work, they can run lathes (for wood and metal) and drilling machine tools, they can operate any carpentry or metal working instrument, they can read blueprints, and their level is actually that of the first or second category. Of those graduated in 1982 60 percent entered vocational and technical schools and tekhnikums, but even those who went into the ninth grade derived immense advantage from these lessons in productive labor.

The training assembly shop of the Minsk Termoplast plant. In it the children assemble standardized components of radio equipment. During the 7 years since the plant has fully entrusted these products to the school children it has not received a single complaint about them and has never failed to meet the deadlines for delivery to the consumers. And previously this happened frequently because the regular assembly personnel preferred work which paid better and was not so monotonous, so they left at the first opportunity. The adolescents do not leave, although they have the right to change their profiles during the first 2 months of training. On the contrary, they are happy to sit at the conveyor and they are ready to work every day during vacations. They are learning assiduity, patience and responsibility for the assignments they are given. They are becoming accustomed to labor discipline, and they understand the force of moral stimuli and labor competition. For first place in this means a monetary bonus, a trip for the whole group through the hero cities at plant expense, the challenge banner, and the "lightening" in the hallway of the enterprise, where the parents of many of the school children work.

The Voroshilovgrad interschool industrial training combine. Each of its shops is a subdivision of the base enterprise. The lathe shop, for example, was equipped by the plant imeni Oktyabr'skaya Revolyutsiya. The machine tools here are exactly the same as in the plant itself. There is a part which is produced only by school children. This means that during 9 months they must turn enough of these parts to last the plant a whole year.

In the shop which is equipped with the latest machines from the knitting factory the school children make bootees, babies' jackets and shorts, which go directly to the stores and are included in the factory's plan.

So far approximately one-third of the senior classmen of Voroshilovgrad are studying in this complex and almost half of them later select the occupation they acquired in its shops and offices. Half is an average, but, for instance, all 100 percent of the furniture makers go to work in that occupation. Such a result has become possible because of the fact that the enterprises of the city do not regard the complex as a regular burdensome load, but see in it a natural reserve of labor force. This is why more than half of the personnel at the industrial training combine are workers of base enterprises, they receive their pay there, and the enterprises are responsible for the quality and repair of equipment, relieving the students of these concerns which are not appropriate for them.

The industrial training shop of Kaliningrad. It has been training young replacements for more than 23 years. Each year 500-700 students from nine schools of the republic train there, and about 300 people are graduated. During 1960-1982 5,800 school children acquired labor occupations here with a rating of categories 1-2. Approximately 40 percent of them are working at enterprises of the city, and 27 percent of them in their immediate specialty (lathe operators, milling machine operators, fitter-instrument workers, radio assembly workers, typists). The profiles of training in the shop are determined by a decision of the city soviet of workers' deputies, taking into account the needs of the city. The shop has nine production sections: 2 lathe, 2 milling machine, 3 carpentry, a radio assembly and a typing section.

The general training in material management, machine management, technical documentation, and organization and economics of the industrial enterprise are basically the same for all profiles of training. Most of the special training comes in practical studies and production practice at specialized work positions for each student. On orders from the base enterprise, the school children sometimes perform fairly complicated and very necessary work in a volume of 70,000 norm-hours a year. The shop is close to being self-supporting. All questions of selection of personnel, financing, material and technical supply, repair of equipment and so forth are resolved by the management and the services of the base enterprise, of which the shop is also a part.

Depending on their complexity, the items made by the children are inspected during the various operations or in the final stage. Every industrial training instructor has a personal stamp. This and the journal number of the student are attached to each part that is released by a student. This makes it possible to determine specifically who has produced good products and who has produced products of poor quality.

School No 133 of Volgograd. With the help of the patronage enterprise, the school has created a powerful industrial training base: a machine shop (30 machine tools), a drilling and metal working shop (15 working positions), metal assembly shops (40 working positions), an electrical assembly shop (24

positions), a sewing shop (25 positions) and a carpentry shop. There is also a small automotive facility: an office for automotive affairs and rules of the road, a laboratory for practical studies in adjusting automobiles, a training section, an area for capital repair and technical inspection, and training automobiles.

Younger school children (grades 1-3) work with scissors, needles, brushes, cardboard and glue for 2 hours a week. For them productively labor is introduced episodically and it consists of simple operations. But the children do it with great pains. For instance, they paste wreaths of Christmas tree decorations made by senior classmen on the boxes, tie wire together in bunches of the necessary size, and so forth.

The children of grades 4-8 perform more difficult work on small lathes, screw cutting, milling and sharpening machines. They make bolts, nuts, screws, electronic relays, and small components and parts for various machines on orders from the enterprises.

In recent years, on orders from trade, the school has been producing Christmas tree wreaths. This work requires of the students not only attention, precision and skill, but also a knowledge of the school course in physics and the fundamentals of electrical equipment. It is necessary to cut a wire exactly the right size, to strip the ends, to solder 25 small washers and the same number of large ones, to solder in the diode, to join the wires to the circuit, and to attach the plug. Each wreath costs 5 rubles. Knowing the cost of the item, the school children begin to value their work and have a respectful attitude toward simple operations which result in this thing being born.

The industrial training shops are on complete autonomous financing and are essentially small industrial enterprises which have all the most important elements of the plant structure: production, sales, supply and other services. All this makes it possible for the students to become intimately familiar with the basic principles of production organization. The school children receive wages and participate in production administration. They produce NS-151 table drills. Each of these drills weighs 115 kilograms, consists of 86 various parts, and costs 186 rubles. During the years the shops have been in existence they have produced more than 300,000 rubles' worth of these products. The demand for them exceeds the production capabilities 5-7-fold.

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CONSUMERS EVALUATE PRODUCTS MADE BY SCHOOL CHILDREN

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in
Russian No 2, Feb 84 pp 133-134

[Article: "Consumers' Opinion"]

[Text] B. I. Shnaper, director of the Semenov plant for mineral wax. Yesterday's school children have arrived at the plant. My colleagues and I have the firm conviction that some of them do not have an internal need for labor, especially labor without prestige. It is difficult for such people to agree to work by shifts in the continuous technological process, a subsidiary business and so forth. The attitude of these young people toward their work leaves something to be desired, and they have a distorted idea about wages.

I have no intention of generalizing and placing them all in one category. But my own individual observations still give me pause. I do not recall a single case in my production practice in which school graduates with certificates of having mastered labor professions could realize the labor skills they acquired in school without additional training. This is why they begin work as trainees and subsidiary workers.

We at the plant try to find a strictly individual approach to each young worker (and not to "youth" in general), to discover his inclinations and to interest him in production and the traditions of the collective. We try to find the string on which we can play. We do not always succeed in doing this, and therefore success does not come as frequently as we would like.

For people who have just come to the enterprise the authority of the foreman, shop chief or director is greater than that of the school mentors, if only because of the newness of the situation. And it is wrong not to take advantage of this in order to direct the workers correctly. But there is no goal-directed informal system here. Yes, gaps in school training and education can be filled in in production (and in later stages of training), but this is done at a high cost.

Yu. I. Borodin, director of the Savino plant for asbestos cement items. During the past 2 years 12 school graduates have come to our repair and machine shop. Only three of them got down to work immediately, accepted the

requirements of labor discipline without resistance, and persistently studied lathe work. There are no problems with them in production if only they are trained in the occupation and the work is organized correctly.

But what about the rest of them? They do not strive to learn to work as quickly as possible and to utilize working time as completely as possible; and they are quick to violate the internal labor policy. But, after all, all of them have completed school and have learned from the same educators!

Children come even to the first grade with different attitudes toward labor. I agree that in school it is too late to develop these. Here one can only re-educate them, and then only if the goals and methods of the re-education are correctly received by the family, that is, if the parents work side by side with the school to correct the bad habits that have been instilled in the child during the first 7 years of his life. Unfortunately, this elementary truth is beyond many mamas and papas. I am firmly convinced that the family is the most important unit in the individual's development.

The state basically bears the losses from idlers, drunkards and parasites. This is not so appreciable for the family, especially when their poorly reared children become independent and leave the family. How does one actually increase the responsibility of the parents for rearing their children? For example, materially. If they have reared a worker who is useful to society, they should receive an amount of money in addition to their pension.

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EDUCATION SEEN AS RESERVE FOR ECONOMIC GROWTH

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 135-138

[Article by I. I. Lukinov, academician of the UkrSSR Academy of Sciences, director of the Institute of Economics of the UkrSSR Academy of Sciences (Kiev): "The Union of Pedagogy and Economics"]

[Text] At present there is no more crucial problem than increasing the effectiveness of production. Ways and reserves for solving this problem lie not only in the sphere of technical equipment and technology, but also in the sphere of training and education of youth. It seems that it is necessary to include in the concept of all-around intensification such an important constituent part as the creation of prerequisites for forming the country's personnel potential as early as in the family, the preschool institutions, and especially the school.

Questionnaires of school graduates in Zaporozhye and Khmel'nik oblasts and Kiev show that the need for personnel in the enterprises located in these regions exceeds almost 6-fold the number of boys and girls who intend to select labor occupations. In the Ukrainian SSR the competition for technical schools is decreasing, while there is an excessive increase in the number of students entering humanities, trade and other VUZes which train personnel for the nonindustrial sphere. Approximately 60-65 percent of the youth select their occupation and place of work at random, which, according to calculations of the laboratory for vocational orientation of the Ukrainian SSR Institute of Economics, exceeds labor turnover by 20-25 percent.

At the present time in family, preschool and school education, labor, especially physical labor which is involved in production, is relegated to the last places. Certain parents and schools instill "intellectual snobbery" in their children -- the false notion that knowledge in and of itself forms a good worker, organizer or public activist. In fact knowledge is only a prerequisite for the development of these qualities. The widely known and frequently repeated parting words from Lenin to the young people : "learn, learn and learn some more" -- should be augmented with the no less important: "Only in labor with workers and peasants can you become real communists."

We know of schools in the country, including in the Ukraine, which are skillfully realizing this Leninist behest. We have in mind the student production brigades and the industrial training combines (UPK), which are effective from an educational and economic point of view. The school children master knowledge and skills directly from practice -- in the fulfillment of planned assignments of the patronage enterprises and businesses, personal participation in socialist competition, student self-management, competitions for occupational mastery and so forth. In the Vinnitsa UPK, for example, each school child has his own "Account card for the output of commercial products," on which ratings for labor are registered -- productive labor, for which there are norms and both moral and material incentives.

Education can only gain from such a union of economics and pedagogy. The enterprises not only achieve economic results (The Vinnitsa UPK annually produces 200,000-250,000 rubles' worth of products a year), but, the main thing, they have favorable prospects for attracting labor replacements.

Even now in the shops of the Vinnitsa enterprises which have their own training classes in the interschool UPK there are more students from the city schools. And this reduces the outflow of youth from rural areas and reinforces the rural personnel potential.

In the Ukrainian SSR many rural schools have achieved appreciable success in labor education of youth. We know of the experience of the Bogdanov and Pavlysh schools, in which the children are successfully combining training and labor on the fields and farms, and in the sphere of culture and consumer services in rural areas. The monthly weight gains of hogs on the Pavlysh school "farm" are 15-20 percent greater than on the kolkhoz.

Students of many city schools are working successfully in summer camps for labor and recreation. This way they become familiar with the mass agricultural occupations, strengthen their health and enjoy valuable recreation, while at the same time appreciably reducing the need for workers and employees who are taken from the cities for agricultural work. In the summer of 1981 more than 30,000 students of the grades 7-9 in Kiev schools worked on the fields of Kiev Oblast, performing about 60 percent of the work envisioned for city dwellers. The school children were paid 300,000 rubles for this. It is known that the enterprises pay all the wages of their workers whom they send for agricultural work. Calculations have shown that the group of Kiev enterprises who use their workers and engineering and technical personnel to render assistance to the sovkhoses pay them 7-10 rubles in wages per 1 ruble due for the volume of agricultural work that is performed. By replacing adults on the sovkhos fields, the school children have made it possible for these enterprises to produce a significant quantity of products and to achieve an effect of 2.5 million rubles.³ And this is only the savings from wages of personnel who, if they were to go⁴ to the sovkhos, would receive unearned money at the main place of employment.

But these are only the first important steps. The problem of labor education should obviously be solved more radically. Labor should be organically included in the system of training and education. Educators should be well

aware of the needs of the national economy for personnel. It would be a mistake to educate children in the idea that scientific and technical progress will soon completely relieve man of physical labor and that he will be able to control production with the help of automated equipment.

The possibilities of scientific and technical progress are indeed inexhaustible. But this does not preclude, but, on the contrary, presupposes real labor education, without which scientific and technical progress itself is unthinkable. A love of labor and man's physical and mental labor have been, are and always will be the greatest achievement of the society, a means of developing the best qualities of the individual. Pedagogy and economics are an inseparable unity of two spheres of the life and conscious activity of modern man.

School is the cell of society and, consequently, an element of the economic system as well. Any interruptions or disorders in it are inevitably reflected in the functioning of the entire system and reduce the effectiveness of production. One hardly need know a lot in order to refer to a shortage of one kind of thing or another ... It is more important to know that part of the blame for the shortage can be attributed to omissions in labor and economic education and in the vocational orientation of youth, in which educators participate -- both parents and teachers. "You reap what you sow." If you do not teach a child to work from childhood you will end up with a sponger and a do-nothing. One must not only be aware of this elementary truth, but also act in such a way as not to allow serious mistakes in education. This is a true sign of an active life position in an educator.

In this connection it is appropriate to say a couple of words about the training of teachers. It is clearly "theoretized" and is poorly coordinated, paradoxical as this may seem, both with school life and especially with economic life. Attention should be given to the experiment which has been conducted in the Poltava Pedagogical Institute since 1981. The pedagogical vocational orientation which is well arranged in 300 schools of the oblast is combined with high-quality training of teacher-educators in the VUZ. By a decision of the board of the UkrSSR Ministry of Education which approved the experiment, two city secondary schools, in which the students and teachers conduct classes and lead discussion groups, and a vocational and technical school have been transferred to the pedagogical institute. They are considering including a kindergarten and one or two enterprises in this complex. The organic link between the pedagogical VUZ and the pedagogical (kindergarten, school) and material productions undoubtedly creates favorable conditions for training educators who will live with the interests of the country as well as its problems, will contribute as much as they can to solving them, and will help youth to master the "science of life."

Footnotes

1. For calculation they used figures concerning the causes of actual and potential labor turnover at certain enterprises of Kiev and Vinnitsa. They compared, in terms of comparable parameters, workers who had selected their

occupation and place of work on the basis of fairly clear and informed ideas about their future work and those who had made their decisions randomly.

2. Lenin, V. I., "Poln. sobr. soch." [Collected Works], Vol 41, p 317.

3. Ferov, V. A., Belomesyatsev, A. V., "The Socio-Economic Effectiveness of the Utilization of the Labor of School Children in Agriculture and Ways of Increasing It in Light of the Requirements of the 26th CPSU Congress," in the book "Puty povysheniya effektivnosti ispol'zovaniya truda molodezhi v usloviyakh razvitogo sotsializma" [Ways of Increasing the Effectiveness of the Utilization of Youth Under the Conditions of Developed Socialism], Kiev, 1981, pp 139-140.

4. The factual side of the matter is presented here. The question of the expediency of retaining at the place of employment full payment for people who go for agricultural work deserves special consideration.

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IMPORTANCE OF BALANCE BETWEEN WORK AND EDUCATION STRESSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 139-141

[Article by V. T. Khristenko, Hero of Socialist Labor, first deputy chairman of the Altay Kray Ispolkom (Barnaul): "Toward a Balance of Knowledge and Industry"]

[Text] It is generally known that as the years go by the school children must absorb larger and larger volumes of knowledge. But nonetheless the problem which should be under discussion everywhere is not training, but education.

In the school, as in the tekhnikum and VUZ, training (it is in first place) and education (which, unfortunately, is in second place) are handled by the same person. The teacher frequently has neither the time nor the energy to solve problems in the latter area. The more so since he is regularly held accountable for training, while he is not formally responsible for education. Many class leaders reduce their role to conducting class hours. For this they are paid an additional 10 rubles a month. In my opinion, it is wrong to escape the proper arrangement in this way. It has long been time to devote the proper attention to this problem and, say, organize an institute of educators for training institutions, including for the schools.

The present form of secondary education has been in existence for several centuries. We are now trying to squeeze new content into the old form. Unsuccessfully! It does not provide the main thing -- it does not develop the need to work in man!

Turning to the Makarenko experience, we see that in the pair of words, "labor -- training" labor comes first. It was with labor that he reformed the difficult children and adolescents. In the modern school labor occupies a thrice subordinate position. Lessons in labor are above all lessons, a particular kind of training. They can never instill a love for labor. The Makarenko practice cannot be simply adopted under modern conditions. To do this it is necessary for work experience to occupy first place, and in parallel with it -- training in particular sciences and methodological devices.

This will not impede the mastery of the fundamentals of sciences. In lessons one should not communicate the totality of information that has been accumulated over the millenia, but teach the students to use the methods of one science or another.

... The student shudders in the face of an examination. Why? Because he is not capable? No, this does not bother him at all. He will live through it if he forgets the year of the death of a Roman emperor. If it is necessary to know the history and geography of his own country, is it so necessary to have required classes in the animal world of the Amazon? Much information which every cultured person should know can be provided to the students as an option. It is necessary to clean up the programs. They can be reduced by eliminating dogmatism and information which does not have to be acquired in school.

We have no cause to be surprised when a tenth grader cannot repair an iron. This is the general rule now. The son of a peasant could ride a horse at age 7 and at 10 he could make fairly responsible domestic decisions. Those times will never return. But it is necessary to instill a love of labor no less intensively today. Our grandfathers and great grandfathers developed a simple truth which we, unfortunately, frequently forget: a child must be educated while he is a baby, and by the time he can walk it is time to re-educate him. Of all the stages, the most important is preschool education. The greatest problems that must be solved come here.

Many successes in labor education are associated with the names of outstanding individual organizers. If nobody else comes to replace such an individual, the cause dies. If so much depends on one individual, this means that there is no well arranged mechanism which guarantees that the level of the leaders will become the average level. There is a shortage of unique teacher-educators at all schools. It is necessary to create a system whereby each teacher and each school would be able to conduct labor education with a palpable effect. How is this to be created? It is a difficult problem, but it must be solved. One thing is clear: the generally applied form of labor education is not justifying itself. It must be changed radically.

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EDUCATION MUST ENCOMPASS MORE THAN OCCUPATIONAL SKILLS

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 141-144

[Article by L. S. Ayzerman, teacher (Moscow): "Professional and Moral Problems"]

[Text] Many school children are not taught to work and enter adult life without being able to do what a person should be able to do such as, say, read, write and count -- alas, this is a truth which requires no proof. With all its strivings and achievements, labor education has still not found its optimal forms.

The unqualified engineer, the tailor who cannot sew, the builder who cannot build, the physician who cannot heal ... these are our misfortune. We do not have enough professionalism. But this, as the mathematicians say, is a necessary condition, but not an adequate one. It is also necessary to see something else. Labor is not only knowledge, abilities and skills; it is also the world of moral values, spirituality and ideals. In my opinion, this is where our main problems reside.

There is a widespread opinion that all of our problems are the result of the desire to have and acquire more, and also, particularly, from the powerful invasion of things into our life. Of course there are certain deformations here, but, while arguing against a love of things, one cannot blame the things themselves and see in them some kind of force which disfigures the human being. What is wrong with a physician buying a carpet or a motor vehicle, if he works honorably, heals skillfully and is attentive to the ill? The problem lies elsewhere: sometimes this physician is indifferent and, moreover, incompetent. That is, the essence of the matter is not in what a person acquires, but in what he gives.

I grew up in a family which worked hard and honorably, and in my life I have encountered many workers who deserve all possible respect. But now more and more frequently I hear admissions from my students: "I got a good job -- not much work, and one can read, study and talk." They are not only not ashamed to discuss this, but are even proud of it. Of course there is much that is assumed in the joking formula "wherever you work, as long as you do not work."

But still there is more than just bravado behind these words. It is no longer shameful to work poorly -- this is the main thing. And the roots of this go back not only to the school, but also to lessons in labor.

"Nowadays people want not only to contribute, but also to receive. This is probably natural. In the final analysis all efforts should be directed toward the good of the individual" -- this is the opinion of my student. This is essentially true. But the desire to receive more frequently prevails over the desire to make a larger and better contribution, and, moreover, it gives rise to a desire to contribute less. We are frequently more demanding of what we receive than of what we give. The young candidate in a scientific field who complains about a mediocre film and at the same time is searching for a subject for his dissertation which is simpler and more tested; the salesman who is disturbed by the parquet which was installed sloppily in his new apartment, but deals boorishly with his customers -- such phenomena are not so rare. We demand much more of others than we do of ourselves.

And it is precisely in what we do and how we do it, how we give, make demands on ourselves and feel our personal responsibility that we find concentrated our major moral problems, acquisitions and losses. In my opinion, it is not so much abilities and vocational skills that are important (although nobody will deny that their role is immense), as it is the direction of the individual, his system of values, ideas and ideals.

One cannot compare labor education to training in classes. Because modern labor is impossible without the ability to learn constantly and acquire knowledge. Because we need physicians, teachers, engineers and scientific workers; and it is not a matter of indifference how they have mastered the fundamentals of sciences in school. Because one of the tasks of the school is to give each person the opportunity to become a multifaceted individual, and this means that it is unacceptable even to ask the question: "Why should the future stone mason know about ancient Rome, and the future milkmaid -- about the literature of romanticism?" Because today's school children are tomorrow's parents, and the level of education of future generations depends on their general educational training. Because without raising the general educational level of the population and advancing its culture, it will be impossible to enlist workers more and more extensively into the management of the national economy and into social and political life.

And also because education gives (rather -- should give) those moral reference points beyond which joining into labor and work in and of itself will not produce the desired results. For instance, they say: what difference do the flora and fauna of the Amazon make to the Soviet school child? If one is speaking of learning the names of fish and plants, of course, there is less point to this. But recognizing the flora and fauna of the Amazon instills that ecological culture of which we do not have enough. If every developer and builder had it we would not be so afraid of causing so much harm to nature during construction, for which sooner or later it will take its revenge on production itself. Knowing the fates of the Rhein and the Amazon, it is easier for us to solve problems of protection Russian rivers and Kazakh fields.

Our problem is not that the school gives a large volume of information and does not give enough instruction in how to work (although, of course, overloading is a crucial problem), but that this knowledge does not have enough humanistic spirituality or moral potential, and it is frequently formalized.

The history teacher is nearly always much more concerned about how to explain to the students the difference in the program tenets of the northern and southern Decembrists than to inform them of the spiritual grandeur of the man who traded colonel's epaulettes for a prison camp in the name of ideals and conscience. And the teaching of literature amounts to the assimilation of the sum of information about the writers and books. I recently read in Marina Tsvetayeva: "Let us think about the teaching of literature in the secondary school. The young students are given 'The Drowned Man' and we are surprised when they are frightened. The older students are given Tatyana's letter and we are surprised when they fall in love (shoot themselves). We put a bomb in their hands and we are surprised when it explodes." Today we are surprised by something else -- why after reading 'The Drowned Man' they are not frightened, and after Tatyana's letter they are not in love? We put a literary bomb in the hands of children and it does not explode... They simply take it apart -- for a grade.

Once I recommended that a tenth grade girl I know read a novel by Chingiz Aytmatov, "And the Day Will Last Longer than the Century," which made a strong impression on me. Having read it, she asked me just one question: "Is this suitable for an active position in life?" Which translated for the uninitiated means: will this work help if one is to write on an examination an essay on an active position in life? This is what results from the fact that the students are always hearing from the teachers this appeal: "Watch on television today the 'minutes from one meeting.'" This is about the subject on the 24th ticket concerning labor heroism in the works of Soviet literature of the 1950-1970's." Too frequently what is discussed in literature classes becomes only training material for the students, a homework assignment which will be reflected in the diary, journal or certificate.

Sometimes we understand spirituality one-sidedly: get ahold of a book by Marquez, put some pictures from the Pardo on display, acquire the next volume of "literary monuments" ... There is no and there cannot be any real spirituality unless man is working and taking care of business. It is precisely in labor that spirituality is realized. Although, of course, not only in labor, but in all of man's life. On the other hand, the fact that man works is associated with his spiritual and moral potential. This is why a discussion of labor education should also be a discussion of moral education.

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HEAD ENGINEER OF YAMBURG CONSTRUCTION PROJECT INTERVIEWED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 149-157

[Interview with G. A. Shemrayev, head engineer of the Yamburg project: "I Know a City Will Be There"]

[Text] The EKO brigade met with Gennadiy Alekseyevich Shemrayev in a cart on the bank of the Nyude-Mongoto Yepoka River where the port and city of Yamburg will be. Chestnuts were in bloom in the parks of his native Donetsk, but in the area of the future city it was the middle of winter. A blizzard drew the snow onto the ice of the Ob' bay, surrounding the cars and cargo shipped in for the navigation period, as well as the pilings of the first, not yet clearly defined piers.

...The pilings freeze to the ground in the summer, which says something positive about the pilings and something negative about the summer. In order to give a better idea of the Yamburg climate, let us give the temperatures of the cities through which we passed on our air route to Yamburg. This was on 26 April 1983: Tyumen -- plus 18 degrees (grass, leaves on the trees), Surgut -- plus 10 degrees (neither grass nor leaves), Novyy Urengoy -- about zero (snow in places), Yamburg -- minus 12 degrees (snow and wind everywhere).

The first question to Gennadiy Alekseyevich reflected ordinary human curiosity.

[Question] How did the Donetsk YuzhNIIGiprogas end up being the planner and developer of the Yamburg deposit?

[Answer] Our institute is one of the oldest planning institutes in the country; it is more than 50 years old. It was formed for designing underground coal gasification systems (incidentally, this technical idea is popular again now). Gradually, even before the war, the institute partially abandoned the tasks of underground gasification and took up planning the development of gas deposits in the Ukraine and Stavropol. The collective earned scientific authority with these plans. Therefore when there arose the task of assimilating the gas deposits of the Tyumen North, the YuzhNIIGiprogas received the assignment for planning their development.

[Question] And you are still received here as residents of the far north?

[Answer] You might say that I am an old timer in the North: I participated in planning the development of Medvezhye, Urengoy and Vygnapur deposits, and I have been working on the Yamburg project for a fairly long time. I received my first assignment in 1975.

In general there are many of my compatriots here, so many that the Yamalo-Nenetsk Autonomous Okrug is jokingly called the Yamalo-Donetsk. And the owner of the car in which we are sitting, supervisor Rud', came from the sunny Crimea.

[Question] In the press from time to time doubts are expressed about the expediency of having planning organizations at a great distance from the petroleum and gas wells. What do you think about this?

[Answer] These doubts are unjustified. If we were to transfer large planning institutes, say, from Donetsk or Leningrad to Tyumen or Surgut or even Urengoy, we could not get by without large losses which would be reflected primarily in the quality of the plans. And this would violate the established technology of planning and have a negative effect on the time periods for drawing up the plan and its quality.

It is easy to make a rash decision. But then it will take many years to reach the previous level of planning, the accumulated experience will be lost, and previous mistakes will be repeated. And in general: if it is permissible to bring workers to Surgut from Transcarpathia, why can the planners not live in Donetsk?

[Question] How much time did the work on planning the assimilation of the Yamburg project take?

[Answer] It is difficult to estimate it since at the same time the same collective was doing other work as well, some of which was being started and some being finished. But if one singles out the time when Yamburg was the main project for the planners, it was more than 2 years.

[Question] Tell us about the plan in broad outlines.

[Answer] The Yamburg deposit is hundreds of operational wells which are joined together into clusters of 3-4 each. In the tundra they form about 120 sites, each of which has roads, pipes and electric power. The average yield of the wells exceeds the yield of the most productive wells in our best gas deposits, for example, Medvezhye.

The realization of the plan is estimated at more than 4 billion rubles, which is comparable to the largest construction sites. The plan is one of the largest of the 12th Five-Year Plan, not only among energy projects, but among industrial projects as a whole. In 1986 the deposit should reach its first goal, where the level of planning will be fully manifested.

Our work was preceded by a large amount of research. And I should like for the names of the researchers who began the Yamburg biography not to be forgotten. They include Viktor Yevstraf'yevich Kravchenko, Igor' Vasil'yevich Pisarevskiy and Grigoriy Ivanovich Mokhonin. The high quality of the research work provided for the fruitful labor of the planners.

[Question] As the head engineer of the project, do you bear full responsibility for it?

[Answer] The plan for the assimilation was distributed among three main developers if one does not include the road construction workers. Our institute is responsible for industrial planning, the Leningrad Zonal Scientific Research Institute of Planning is developing the residential zone, and the Lenvodokanalproyekt Institute is developing the port and purification installations.

The fact that there are three developers is explained by established traditions of individual planning of industrial and residential buildings and hydrotechnical installations. These traditions have their merits (specialization, deepening of professional mastery) as well as their shortcomings. With three masters of the project, a good deal of energy goes for all kinds of coordination in the triangle of Donetsk-Leningrad-Tyumen. Remember that each side of the triangle is about 2,000 kilometers long. The concrete result: up to this point we have not established a general plan for Yamburg. Incidentally, this is not a precedent. It is simply that in this issue the control of the Interdepartmental Commission of the USSR Gosplan for the Tyumen Petroleum and Gas Complex should be stronger.

But the management is improving and the coordination on Yamburg is proceeding much more smoothly than it did when establishing the plans for the development of preceding gas deposits. This pertains both to contacts among the leading organizations and to interrelations between them and various control and supervision agencies.

[Question] It would be interesting to know about the technical innovations that have been realized in the plan for the assimilation of the Yamburg gas deposit, as compared, say, to the plans for the assimilation of the Medvezhye or Urengoy deposits.

[Answer] I will not go into the particular technical innovations because there are so many of them. I shall discuss two innovations which I consider to be essential.

The compressor station which was delivered via water has been assembled for the first time. Almost all of it is built on six pontoons, which are later to be used as elements of the design.

In order to understand the essence of the second innovation, it is necessary to have an idea of the technology for preparing gas for transportation. The gas is first cooled (then liquid fractions are easily removed from it) and "dried." As a result it can be pumped without undesirable consequences: the

pumps do not get dirty, the pipes do not get clogged up, and so forth. With the traditional system, the gas is cooled, roughly speaking, as in an ordinary refrigerator, but the energy comes not from the network but from heaters that operate on propane or butane.

But when preparing gas at the Yamburg deposit we shall use domestic technology which is based on so-called turbo-detanders (from the French detente -- relaxation). The scientific and technical solution makes it possible to significantly improve gas extraction. The technology is very promising, since it provides for technological unity of the preparation of gas and the change in pressure. It has never been used anywhere yet. We are hoping that Yamburg will give it its passport for existence. Turbo-detanders in Yamburg alone will save 232 million rubles.

[Question] The plan envisions that tens of thousands of people will live under these difficult climatic conditions. Is this really necessary?

[Answer] I consider settled population to be a mandatory condition for the development of Yamburg. It is difficult to include my judgments about this in the plan, but they are substantiated. A person who is in the North temporarily, who associates with it the possibility of earning a little extra and experiencing a bit of exoticism and romanticism, automatically acquires the psychology of a temporary resident. He is not bothered by the fact that the caterpillar tractor will leave its track in the tundra for decades. For his descendants live far away from these places.

The variant of locating the city another 30 kilometers to the north was considered in the planning developments. In some respects the area there is more convenient than this one. But then the city and port of Yamburg would be on one of the few rivers where the remarkable muksun fish breed. To the Siberians it is better known than sturgeon. In calculations of economic effectiveness one does not take into account that sooner or later the muksun would disappear.

The psychology of a temporary resident is reflected in his attitude not only toward nature, but also toward equipment, technical equipment, materials and, finally, the quality of work.

I am not even referring to those problems of the watch method which have been discussed repeatedly in the press, including in EKO: the negative effects of frequent trips to different climatic zones on the health of the workers, expenditures on transportation and many other things.

[Question] One senses a personal note in your arguments in favor of a permanent village or settlement in Yamburg.

[Answer] We planners have learned a lot from the village of Pangoda. It was initially planned as a watch village, then the plan was revised, and one decision followed another ... As a result, in the Pangoda school there are five children for every space. It is necessary to be oriented toward the future in good time, toward stable and long-term development.

[Question] The plan for Yamburg does not include a TETs. This hardly indicates calculations for the long-range future ...

[Answer] You understand that a TETs is a serious matter. And when we stop drilling in the Yamburg deposit, the need for labor force will decrease sharply.

[Question] And how soon will that happen?

[Answer] Dozens of years. I understand the objections that are possible here, so I shall give one more argument which is perhaps more important. To include a TETs in the plan means to lose another 1.5-2 years. Such are the rules of planning, and they cannot be violated.

[Question] But still it would be good to do everything on a solid basis, for a long time.

[Answer] These are general words, and life does not wait. For example, the present stage in the assimilation of Yamburg is proceeding practically under the initiative and enthusiasm of managers of the Nadymgazprom Production Association. A large role is played by the directed educational work which is being conducted by the Tyumen CPSU Obkom. It orients production workers toward stable rates of development not only now, but also in the future, which is impossible without prompt assimilation of new deposits.

And again I should like to note the correct understanding of state interests on the part of managers of the Nadymgazprom Association. They are operations workers and not builders. And the assimilation of Yamburg is not included in their immediate responsibilities. In any case it would not be difficult for them to avoid extra worries; all they would have to do would be not offer their services.

[Question] But the USSR Ministry of the Gas Industry has not remained on the sidelines either.

[Answer] You forget that the function of this ministry is to extract, not to build. It is good that it has permitted the management of Nadymgazprom to show economic initiative.

Now that the first step has been taken, the first residences have appeared in Yamburg, the port is beginning to operate little by little, and powerful subdivisions of the Ministry of Construction of Petroleum and Gas Industry Enterprises will be enlisted in the construction.

[Question] What is the first step?

[Answer] Initially, as part of a pioneer village, it was intended to assemble a Finnish residential complex for 400 people. This will cost 11 million rubles, but the lion's share of this sum will be for expenditures on delivery.

[Question] Tell us about this residential complex in greater detail.

[Answer] It is a standard complex, like those installed in many places along the route of the Urengoy-Pomary-Uzhgorod pipeline. It includes two dormitories for 48 people each, six 2-apartment single-story buildings, two 16-apartment two-story buildings, a school to accommodate 80, a dining room, a bath, and other enterprises of the sphere of services.

Unfortunately, the structure of those employed has not been coordinated with the structure of the residential space. This has happened because, as usual, organizational planning is being delayed or there is none at all. No special methods of prediction are needed to foresee that not 48 but more people will live in each dormitory. The drillers hope not to allow builders in the housing complex. But they can set their own conditions ... In general, the usual life will proceed, and interdepartmental relations will be established. It is just that this will take place on the edge of the earth ...

[Question] You mentioned that it is planned to construct purification installations in Yamburg. Tell us about them in greater detail.

[Answer] The main difficulty for planners of cities in the polar region is that the rivers here are free of ice only 2 or 3 months out of the year and they do not purify themselves. Effective purification of wastes especially for the polar region has not yet been invented. Methods of freezing the wastes, which are used in some places, inevitably lead to the problem of what to do with them then?

[Question] And in Yamburg?

[Answer] The developer here, the Lenvodokanalproyekt Institute, is using a traditional technological solution -- aeration tanks. These are large heated reservoirs, with air introduced into their lower parts. The air bubbles, surface-active substances and micro-organisms especially intended for these purposes provide for the level of purification envisioned by normative documents.

[Question] Gennadiy Alekseyevich, were nontraditional methods of purification considered?

[Answer] Of course. The variant with water supply and a closed cycle of water circulation for technical needs was analyzed. These constitute most of the need for water at the new deposit. But recycled water supply increases the requirements for purification. And there are no effective technological solutions for water purification in polar areas not only in our country, but in the rest of the world either.

[Question] And was scientific research work ordered for this subject?

[Answer] The extremely short time periods for planning did not allow ordering scientific research work. This pertains not only to the purification, but also to the plan as a whole. If the results of research work which interest us have not been received beforehand, in reserve, then it is too late to order them. We can only review and evaluate the best available in world practice.

[Question] Then perhaps you yourself should be concerned about such an order ahead of time, and go, for example, to academic institutes which have a catalogue which would list the problems encountered by the planners?

[Answer] That is not difficult to do.

[Question] Our magazine could help you arrange contacts regarding such a catalogue.

[Answer] Let us give it a try.

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REPEATED USE OF MACHINES AND EQUIPMENT DISCUSSED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 158-160

[Article by V. T. Shmelev, engineer (Magadan Oblast): "Can Equipment Be Used Repeatedly?"]

[Text] We produce instruments, tools, machine tools, mechanisms and so forth in immense quantities, but the need for them in the national economy is still not being fully satisfied. Therefore it is necessary to take advantage of every opportunity to improve the provision of equipment for the enterprises and organizations.

I happened to watch a television program on how one of the secondary schools had created its own television studio. The city television studio had received new equipment and the old equipment was given to the school to be used by the children. How wonderful. But how did they manage to do this? After all, according to the existing policy, obsolete equipment is to be written off, destroyed and sent for salvage.

Now let us take a look at the picture that has taken shape in industrial enterprises. The leading ones receive new equipment according to their annual funds. True, it lies around in its cartons so long that it becomes obsolete. But this is not what we are concerned about. If they manage to install the equipment quickly and put it into operation, the managers of the enterprise are faced with a problem -- what to do with the replaced equipment, which is still usable but is obsolete for this enterprise? The simplest solution is the send it for scrap metal.

At the same time, other, peripheral enterprises which are not the leading ones not only cannot acquire new equipment, but are experiencing a critical shortage of any equipment, even outdated. But when these enterprises suddenly have a brush with scientific and technical progress and it is suggested that they refrain from the "old," this reveals their complete unpreparedness for operating new machine tools: they do not have skilled, trained workers, knowledgeable specialists, good repair workers or adjusters.

If one compares the enterprises' orders for equipment with what they receive, there is obviously an essential difference, and this is not because the orders have been inflated. New shops and work facilities that have been constructed by the autonomous financing method in peripheral cities stand idle for years. They are idle because of a lack of equipment. Thus in our mining industry in Magadan Oblast there are long periods of idle time because of the shortage of gas electric welding equipment and metal cutting machine tools.

To solve organizationally the problem of the equipment shortage, at least partially, does not seem very complicated. For example, a leading footwear factory has received new equipment. So let them repair the old equipment, provide it with a set of spare parts (at the expense of the ones who are receiving the equipment) and send it somewhere where they do not have such equipment, where they sew footwear with an awl, as is sometimes still the case. Wood processing enterprises, naturally, are not concerned about the problem of the kind of equipment that is found in the carpentry shops and construction shops of machine building enterprises. These examples can be continued endlessly because we do not have:

a system for accounting for equipment that has been disassembled at enterprises, and accounting for the needs of other enterprises for this same kind of equipment;

a norm for renovation and return of equipment which is suitable for operation (so that, say, even half of the enterprises would not send it for scrap metal);

a system of incentives for enterprises which release equipment that is suitable for operation (for example, a reduction of the plan for scrap metal by the weight of the equipment that is delivered, the right to spend the money obtained from the sale of this equipment for paying or awarding bonuses to workers and specialists who have put the equipment into working condition).

In all of the oblast centers, large cities and large enterprises there are electronic computers and even entire systems of them as well as computer centers. And there are USSR Gosplan agencies everywhere. Is it really difficult today, with the help of an electronic computer, to account both for the supplies of equipment that are received and those that are not received; is it difficult to feed into the memory of the machine the list of equipment that is destined for disassembly? Is it that difficult to connect into the flow of information from the enterprises and from the Gosplan and Gosplan? Could the telegrams from the enterprises about unneeded equipment take up that much space in the flow of paperwork? Possibly these are the questions of a dilettante, but the problem is essentially simple: there are "owners" of unused or outdated equipment and there are those who wish to purchase it, and there are no stable ties between them.

The enterprises I have had occasion to visit are poorly supplied with equipment, spare parts and materials. Naturally, under these conditions they take a very thrifty attitude toward what they do have. But in the scrap metal here one can find components, various parts of equipment and even entire sets

of equipment which are entirely suitable for use. Diligent companies assemble entire trucks and bulldozers from the gold mines of scrap metal, and they manage to find good bearings, gears, bolts and many other things in the dumps. Why? The plans for the release of scrap metal are fairly rigid, and neither workers nor time nor money are planned for their fulfillment. And these are certainly not planned for the renovation of equipment before it is written off and transferred to another owner. Here is something to think about. Especially if one recalls that retaining old equipment retards scientific and technical progress and makes operation more expensive.

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NEED FOR BETTER MANAGEMENT TRAINING PROGRAMS AIRED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 160-162

[Article by G. Ye. Germaidze, candidate of economic sciences, scientific leader of the branch laboratory for scientific organization of labor and administration in ferrous metallurgy, Sverdlovsk Institute of the National Economy: "Improving Training Programs in Management"]

[Text] On the pages of the press recently attention has frequently been drawn to the inadequate training of students and people studying in secondary educational institutions in methods of management. Why is training in this area lagging behind? There are many reasons.

First, the extensiveness and complexity of training material on administration and the extremely short time periods. In the 1979 program for secondary specialized training institutions 31 hours are allotted for study of the subject "Scientific fundamentals of management and organization of labor," and only 5 hours are allotted for the actual problems of the technology of management.

Second, management is frequently studied apart from concrete production. Even if the students and trainees solve some situational problems, it is in the form of examples and illustrations, which are poorly coordinated with the functional content of the labor of the line supervisor. They seem to study individual parts of management work, selected at the discretion of the teacher. As a result, the students' knowledge of management is fragmentary and unsystematic.

Third, students of technical VUZes and tekhnikums are not familiar in practice with either the fundamentals of psychology, or the rudiments of industrial pedagogy, that is, the theoretical basis of the methods of management work.

Fourth, management is traditionally taught by economists, who frequently do not have enough practical experience in management of a shop, section or division, and, unfortunately, do not have sufficient knowledge in the area of psychology of management and industrial pedagogy. They use most of the time to study the structure, principles, forms and general methods of management.

The situation is exacerbated by the fact that students of day divisions, when beginning to study problems of production management, do not yet have sufficient experience in life, as a result of which they frequently perceive the training material as abstract, although in many cases absorbing.

Fifth, management technology, as a rule, is not separated out into an independent discipline, but is included as a part of the general questions of management. But since the dynamics of management are more complex than statistics, many teachers shorten these subjects in favor of general topics of management and planning.

It seems to us that, in order to make qualitative changes in the level of training of the specialist in production management, new measures are needed:

the training material for technology and procedures of management and also for psychology and ethics of management should be separated out into an independent discipline;

the time allotted for subjects on the problems and practice of management should be increased to 100-150 hours, so as to equalize to some degree the possibilities of acquiring qualifications in the area of management, on the one hand, and practical activity, on the other;

special training should be organized for teachers, for example in engineering-pedagogy departments or VUZes of this area. Additionally, each training institution has people who have experience in management work in production. They should be enlisted for teaching disciplines in management, having undergone probation beforehand in engineering-pedagogical VUZes or in the corresponding departments.

The question arises: where does one find the extra training time to expand the program in management? To do this it is necessary to revise the training plans. Take, for example, the program for metallurgy tekhnikums. In the training plan 153 hours are allotted for the subject "Drawing." During this time the student is to learn to draw and read blueprints. But, as a rule, this goal is not achieved to the proper degree. Why? Because the classic content of the subject and the textbooks are not related to the production functions of the specialist.

But if drawing were coordinated with the study of planning and design projects, that is, if they did not study the theory of graphics, but the theory of planning, they would realize the principle "Instead of theory with examples from practice, theoretically substantiated practice in a concrete specialty." Then one could include drawing in the fundamental profile subject "Planning and design service for production" with the status of a section. In this case, the content and the volume of the theoretical part of the section would be dictated by the final goal of the course.

A similar approach can be applied in other cases as well, and as a result of the hours that are released, the number of hours of the management course can be increased.

In a work project we did for the UkrSSR Ministry of Ferrous Metallurgy, we managed to increase the overall volume of training hours for the subject "Administration and management" with a special, individual "Practical session on management of the production collective," to 102 hours, as compared to 7 hours in the program for 1975 and 31 hours in the program for 1979.

And so the main problem in raising the level of occupational training of specialists in the area of management consists in changing emphases: it is necessary to change from teaching primarily statics of administration to a more profound familiarization with the methods and technology of management. Nontraditional teaching methods are preferable: these can include either a situational game, or a specially selected system of real production conflict situations, or training aids.

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FORMS OF ECONOMIC TIES WITH CEMA COUNTRIES OUTLINED

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in
Russian No 2, Feb 84 pp 163-164

[Introduction to articles that follow: "Forms of Foreign Economic Ties in CEMA Countries]

[Text] With the changeover of the countries of the socialist community to the basis of intensive development, the role of foreign trade exchange and other forms of foreign economic cooperation increases.

During the past decade the development of foreign trade in the European CEMA countries has taken place under extremely complicated circumstances. The rapid increases in the prices of fuel and raw material have aggravated the problem of the balance between exports and imports. The prices of imported items have increased more rapidly than those of exported items. There has been an increase in the foreign economic significance of improvement of the quality of the products that are produced and their increased ability to compete on the market. In certain European socialist countries the task of reducing foreign trade indebtedness has been included among the primary ones. In this connection considerable efforts are being made to improve the payment balance, including measures of an organizational nature.

It is typical of the new forms of organization of foreign trade ties to bring production and foreign trade closer together. This is expressed both in the organizational joining of industrial and foreign trade enterprises and in the creation of joint material responsibility and motivation of both side to achieve positive results in foreign economic activity. The result of this activity is increasingly reflected in overall autonomous financing results of the work, right down to the earnings of each worker. Bringing production and foreign trade closer together organizationally does not weaken the state monopoly on foreign trade, which is one of the greatest conquests of socialism. On the contrary, under the conditions of close contact and in unified actions of the producers and the trade organizations, the foreign trade monopoly has greater effectiveness and efficiency.

The European CEMA countries have accumulated a good deal of experience in the area of organizational forms of foreign economic activity. When considered attentively it is also of interest to our country, although it depends to a considerably lesser degree on foreign markets.

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EAST GERMAN COMBINES OPERATE ON FOREIGN MARKET

Novosibirsk EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA (EKO) in Russian No 2, Feb 84 pp 165-175

[Article by L. I. Tsedilin, candidate of economic sciences, Institute of Economics of the World Socialist System of the USSR Academy of Sciences (Moscow): "GDR Combines on the Foreign Market"]

[Text] In all stages of economic construction an important role has been assigned to foreign economic ties in the GDR. About 60 percent of the raw material that is used is shipped in from abroad, and mainly from the Soviet Union. The republic's participation in international division of labor is continuously deepening and expanding, which is shown by the fact that foreign trade turnover is increasing more rapidly than the national income and the volumes of industrial production.

From History

The GDR has been devoting special attention to strengthening the ties between industry and foreign trade since the time of the economic reform. In 1964 the Central Committee of the SEGP [Socialist Unity Party of Germany] approved the "Principles of application of the new economic system of planning and management of the national economy in the area of foreign trade." They envision, in particular, a gradual transformation of foreign trade enterprises (VTP) into daughter organizations of associations of public enterprises (ONP) with the rights of societies with limited responsibility. While remaining under the jurisdiction of the Ministry of Foreign Trade, the VTP's were to become sales agencies of the associations. But this organizational form did not become widespread during that period.

Still, agreements were introduced into practice for coordination of cooperation in foreign trade between the VTP's and the ONP's, which regulate the rights and responsibilities of the partners in the area of the technical level of exported items, advertising, market conditions, prices, and so forth. Industrial enterprises and associations began to be called in more frequently for negotiations with foreign contracting agents, and the VTP's and industrial organizations enter international trade fairs and exhibits together. Joint groups for studying market conditions and price commissions were created, and

specialists of both organizations prepared contracts and agreements for specialization and cooperation in production.

The "Directives for improving economic relations between foreign trade and domestic partners in the area of exports and imports," adopted in 1966, were an important step. They regard the contribution to increasing the country's national income as the main criterion for determining the level of development of foreign trade and other kinds of foreign economic activity.

Even before the economic reform industrial enterprises and associations had accumulated a considerable amount of experience in foreign trade activity. This served as a basis, at the end of the 1960's and beginning of the 1970's, for transferring certain VTP's to the direct jurisdiction of branch ministries, ONP's and combines. For example, a VTP was placed under the jurisdiction of the Ministry of Agriculture, Fruktimpeks -- to the Ministry of Foreign Trade and Supply, and "VMV" -- to the Machine Tool Building Combine imeni 7 Oktyabr' (in the middle of the 1970's under the jurisdiction of the Ministry of Machine Tool Building). Foreign trade enterprises were created for the Rula clock combine and the Karl Zeiss Jena combine for precision mechanics and optics. But a large part of the foreign trade enterprises were under the jurisdiction of the GDR Ministry of Foreign Trade.

In addition to the organizational transformations, measures were taken to motivate industrial enterprises to enter into foreign economic cooperation. Of principal significance here was the utilization (from 1969 up to the present) of the method of the "unified economic result": the industrial enterprises receive from the VTP for products that are sent for export the price obtained on the foreign market and converted into German marks by special coefficients.* The foreign economic activity evaluated this way is included in the unified production result. Therefore the enterprise, in order to provide for the highest possible prices for exported products, is directly motivated to improve their quality, to take market demands into account more fully, to improve the technical service for machines and equipment that are delivered and so forth.

The next stage of the transformation of the system of organization and management of foreign economic ties of the GDR began in the second half of the 1970's. On 9 September 1976 a decree concerning foreign trade was adopted by the GDR Council of Ministers. It declared the Ministry of Foreign Trade to be the only subject of foreign economic activity. It was to provide for comprehensive management of the planning, organization and course of foreign trade operations. This same decree established the responsibility of branch industrial ministries, ONP's and combines for the condition of foreign economic ties.

As the subsequent structural change showed, the expansion of the range of the ministry's duties and authority did not preclude the right of industrial units to enter the foreign market, and VTK's -- to be placed under the jurisdiction

*Before this time accounts between the VTP and the enterprises producing exported products were kept at firm domestic prices.

of industrial agencies. It was important only to provide for the state monopoly on foreign trade.

The changes in the mechanism of foreign economic ties of the GDR entailed an improvement in the entire system of planning and management of the national economy. The goal of these transformations was to increase the role of combines under central jurisdiction. If the OPN's were more administrative than production formations, the combines that came to replace them recommended themselves as a promising form of organization of the production process and management, which met the current needs for economic development of the GDR.

Combines Trade on the Foreign Market

The introduction of combines everywhere, which today produce 99 percent of the commercial industrial output, predetermined the approach to the solution to foreign economic problems and contributed to a fuller combination of the interests of industry and foreign trade. In keeping with the decree on national combines of 8 November 1979,* the combines and their enterprises bear full responsibility for the development, production and improvement of products. These should be able to compete, be profitable, be in demand and have a high scientific and technical level.

The combine participates independently in the preparation and implementation of measures for international socialist economic integration and coordination of national economic plans. It develops proposals for specialization and cooperation of production and joint scientific and technical developments, and it also bears responsibility for fulfilling international economic agreements. The fact is that the combine has been given the right to conclude agreements jointly with authorized foreign trade organizations. The agreements pertain to questions of specialization and cooperation with partners in the CEMA countries.

The decree of 1979 established the possibility of forming foreign trade enterprises (VTP) as parts of the combine. Their purpose is to perform foreign trade tasks for imports and exports on the basis of the principle of the state monopoly on foreign trade. In 1978, even before the aforementioned decree was adopted, at three combines (Robotron, Mikroelektronik and Fortschritt Landmaschinen) they created foreign trade enterprises which were simultaneously under the jurisdiction of the general directors and the Ministry of Foreign Trade. The first successes of these VTP's and also the experience of such combines as Karl Zeiss Jena, Schiffbau and others, which had almost 10 years of experience in independent foreign trade activity, served as a basis for the decision that was adopted in 1980 to extensively introduce this form of combination of industry and foreign trade. The decision envisioned the creation of new VTP's under industrial agencies and the transfer of a large number of the functioning VTP's to dual jurisdiction -- the branch ministry or combine and the Ministry of Foreign Trade.

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In his Accountability Report to the 10th Party Congress, General Secretary of the SEPG Central Committee, Comrade E. Honecker, noted: "Through unified and comprehensive management of science, technology, production and sales within the framework of combines, which is now being extended to foreign trade, it is necessary to seek out broader possibilities of significantly increasing exports and increasing their effectiveness. With the dual jurisdiction of foreign trade organizations, while strictly observing the state monopoly on foreign trade, we are taking an important step in the direction of improving administration and planning."

At the present time 28 of the 53 foreign trade enterprises (VTP) of the GDR are included in combines (including combines which have been assigned foreign trade functions). Twenty of VTP's have been transferred to industrial ministries without being included in combines and five organizations have remained in the system of the Ministry of Foreign Trade.

Today the proportion of VTP's under the jurisdiction of branch ministries and the Ministry of Foreign Trade in the overall commodity turnover is significantly greater than in the VTP's of combines, since, as a rule, the former represent the interests of several combines at the same time. On the whole, products from all the main combines that produce export products, and also from local industry enterprises, are exported through VTP's under the jurisdiction of industrial agencies, and items are imported for various branches of the national economy.

Along with individual VTP's which purchase batching equipment, render technical assistance, and perform a number of other operations, organizations for rendering services in the area of foreign trade, intermediary firms and joint companies abroad have been left under the jurisdiction of the Ministry of Foreign Trade.

Among the general criteria used for including VTP's in branch ministries and combines were: the degree of concentration of export production in the branches, the proportion of exported and imported goods in the overall volume of products produced or sold, and the existence of direct ties with foreign partners. As a rule, the VTP's were transferred to the jurisdiction of combines if their foreign trade assortment coincided to a considerable degree with the program of the combine which produced the majority of the corresponding kinds of products.

If the branch has several related combines (for example, in the GDR furniture industry there are seven of them) and they are joined to one another by a broad network of cooperative deliveries, the VTP is under the jurisdiction of the branch ministry.

As a result of the transformations it has become possible to observe an important principle of organization of foreign trade activity: one VTP operates, as a rule, with one partner within the country (industrial ministry or combine).

In 1981 a decision was adopted which envisions the possibility of creating, within the framework of the VTP's under the jurisdiction of the branch ministry, specialized foreign trade firms with a small assortment program for serving individual combines. Such firms have appeared in the ministries of the chemical industry, electrical equipment and electronics, and transport and agricultural machine building, that is, in the branches with a large list of items produced for export. Thus in the Chemie VTP, which is under the jurisdiction of the Ministry of the Chemical Industry, they are creating 10 foreign trade firms, each of which will work with only one combine. The director of each firm will be under dual jurisdiction -- the combine and the Chemie VTP. The latter retains its own general functional subdivisions: for planning, accounting and accountability, prices, currency and financial problems, personnel and so forth.

Under the new conditions the general directors of the combines and ministers of the branches are responsible for fulfillment of the plan for exports and therefore they will be motivated to improve the structure of the products that are produced and also their quality.

In keeping with the task of organizing a final cycle of the reproduction process, the combines are acting as head agencies for a particular group of items. Thus they develop balances of production, exports and imports. In other words, being a part of a combine, a VTP or firm must import not only and not so much goods for the combine as items which correspond to the profile of the subbranch of which the combine is the head agency.

The managers of combines and the VTP's that are parts of them work in the closest contact with one another. The deputy general director of the VTP is on the board of directors of the combine and makes suggestions about changing the products list on the basis of market requirements and existing market conditions. Production cannot be started on a single new item without the agreement of the deputy general director of the VTP.

Functions of the GDR Foreign Trade Minister

The creation of new VTP's and the transfer of existing ones to industry were carried out on the basis of agreements between the Ministry of Foreign Trade and the branch ministries. With respect to the VTP's under the jurisdiction of branch ministries and combines, the Ministry of Foreign Trade largely retains its functions as the management and supervisory agency. The provisions in all normative documents of the ministry pertaining to management, planning, supervision accountability and financing of foreign trade operations are applied to foreign trade enterprises. The GDR Ministry of Foreign Trade and the branch ministries (combines) issue joint instructions concerning tasks, rights and responsibilities of new VTP's, in which they also establish the issues regarding which one is to be guided by these instructions of the ministry.

The functions of the ministry amount basically to the following:

development of the plan for exports and imports and its breakdown according to the main commodity positions and groups of countries;

currency planning of exports and imports according to the main currency zones and control over the fulfillment of the currency plan;

implementation of the price policy when it comes to establishing their limits;

control over the observance of principles of price setting in trade with CEMA countries;

resolution of problems related to the discovery abroad of additional representatives of VTP's under the jurisdiction of ministries and combines;

management of the activity of foreign trade organizations that are directly under the jurisdiction of the ministry.

As before, the ministry is in charge of issuing permits (licenses) for importing and exporting goods which under the new conditions will be an effective lever for controlling foreign trade activity. In each foreign trade enterprise the ministry has its own authorized agent who checks to make sure that the content of the licenses corresponds to the conditions of the contract.

The transfer of VTP's to the jurisdiction of industrial ministries and combines has required improvement of the planning of foreign trade. As follows from the Provisions for additions to the policy of planning the GDR national economy in 1981-1985," branch ministries plan and evaluate the activity of the combines, taking into account a whole number of mandatory foreign trade indicators, including:

exports and imports in socialist and nonsocialist countries (in currency marks and prices of the enterprises);

the percentage of change of export prices in trade with socialist and nonsocialist countries;

the profitability of exports to socialist and nonsocialist countries and so forth.

An important planning indicator which is set for the combines and enterprises is the currency profitability. It plays an essential role when evaluating all production activity. It is the ratio between currency earnings expressed in currency marks and the wholesale price in domestic marks of the GDR.

In 1982 the GDR Gosplan approved a decree concerning an addition to the policy for planning the GDR national economy for 1981-1985 which envisions expansion of the list of mandatory state planning indicators. They also include foreign trade indicators -- such as "the proportion of exports to nonsocialist countries in the output of commercial products" and "exports of licenses to socialist and nonsocialist countries."

The "Provisions for planning, balancing and accountability for exports of sets of equipment, including deliveries and services related to the exporting of sets of equipment," adopted in 1981, played an important role in the improvement of the mechanism for planning and stimulation of foreign trade activity. According to these provisions, subdeliveries for exports of sets of equipment are equated in significance to direct exports. It is assumed that combines working mainly on subdeliveries will be placed in equal conditions. Moreover, there is to be prompt and high-quality fulfillment of commitments for deliveries of batching items for export products.

Proceeding from the existing planning policy, all assignments for exports and imports from socialist countries for the five-year plan and the year are determined for the VTP by the Ministry of Foreign Trade with the agreement of branch ministries and other agencies. The ministry is also made responsible for developing and submitting state planning assignments and control figures for exports to the combines and VTP's, and for imports -- only to the VTP's

Money Separate

Considerable expansion of the group of indicators of the foreign economic activity of the combines and strengthening control on the part of central agencies over their fulfillment, in the final analysis, increases the responsibility of the combines for performing foreign trade functions.

In the GDR a great deal of attention is devoted to mutual accounts of industrial enterprises and VTP's. As was already noted, they use the so-called "unified economic result" to evaluate the production and foreign trade activity of the enterprises. For combines with foreign trade functions it includes, in addition to earnings from the sale of goods within the country and for export, the result of the activity of the foreign trade enterprise under the jurisdiction of the combine. The relations between the VTP and other enterprises of the combine which give the VTP export products are of a contractual nature. The enterprise receives the equivalent of the sum earned on the foreign market minus the trade rebate to pay for the services of the VTP.

The policy for price setting for imported products is more complicated. Imports of raw material commodities and processed materials and also equipment for which there are domestic prices in the GDR are paid for at these prices. But if no domestic price has been established (industrial installations, unique equipment and other items which have no analogs in the country), the imports are paid for at the equivalent of the currency price translated into GDR marks with special coefficients.

One of the most important results of the measures taken in the GDR for improvement of the system of management and planning of foreign economic ties is the considerable stepping up of the activity of the combines in the area of socialist economic integration. Today this activity is assigned a central place from the standpoint of the interests of the development of the GDR national economy.

Even now many combines are participating actively in the preparation of decisions of central state agencies regarding production specialization and cooperation with the CEMA countries. When implementing individual integration measures the responsibility for the coordination of the work is usually placed on some particular state agency or combine.

And so, as a result of the extensive transformations directed toward improving the system of planning and management of the foreign economic sphere, there has been a considerable strengthening of the ties between the production of goods and their sales on the foreign market, and the managers of industrial ministries and departments, and above all the general directors of combines, have greater responsibility for the fulfillment of foreign trade tasks.

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HUNGARIAN INDUSTRY DEPENDS ON FOREIGN ECONOMIC ACTIVITY

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Article by A. I. Mikhal'skaya, Institute of Economics of the World Socialist System of the USSR Academy of Sciences (Moscow): "Foreign Economic Activity of Hungarian Industry"]

[Text] For many years in Hungary exports have been producing about half the national income. Thus in 1980 they comprised 47.9 percent. In that same year 23.6 percent of the products from industrial production were sold on foreign markets, and in machine building this proportion amounted to 44 percent. Naturally, the formation of ties between foreign trade and industry is constantly at the center of the attention of state agencies, economists and specialists.

Three periods can be singled out in the development of Hungarian foreign trade. After the liberation and prior to the 1950's its main task was considered to be to protect the national economy from the influence of the foreign market. Only a small number of large specialized organizations had the right to enter the foreign market; foreign trade and industrial production were practically separate from one another.

In the 1960's the task was set of increasing the interest of the industrial enterprises in the results of foreign trade activity and bring industry closer to foreign trade. During this period nine large enterprises were granted the right to export products independently, including the Edeshyul't Izzo electric light bulb plant and the Chepel Metallurgical Combine. Several new foreign trade firms were created, including MAVAD (cooperative enterprise for trade in game) and Khungarofrukt (cooperative enterprise for exporting and importing fruits and vegetables). The contractual ties among the enterprises were mandatory at that time. The content of the agreements was determined centrally, and foreign trade organizations received planned assignments to deal with specific parties.

The structure of Hungarian foreign trade which we see today began to take form in 1968. While previously foreign trade played a subordinate role as compared to the other spheres of the national economy, when the country entered the

period of intensive development the role of foreign trade increased. In the decisions of the May (1966) Plenum of the Central Committee of the VSRP [Hungarian Socialist Workers' Party] it was emphasized: "In restructuring the foreign trade mechanism, providing for economic unity of production, exports and imports should be considered to be a basic aspect. This should be achieved primarily by economic methods, with the help of the general motivation of the enterprises to achieve high economic indicators. In cases where it is justified, it is also expedient to organizationally link foreign trade to production or domestic trade."

Under the new conditions a large group of enterprises was given the right to enter the foreign market independently, while preserving and consolidating the network of specialized foreign trade organizations. The system of direct planning indicators that regulate foreign trade activity was abolished. New forms of contractual ties between production and foreign trade enterprises, which were based on principles of autonomous financing, became widespread.

Independently -- On the Foreign Market

The question of independent entry onto the foreign market has always evoked heated discussions. What enterprises can enter the foreign market independently? Under what conditions? The experience in the functioning of the new system has facilitated the search for answers to these questions. The rights and responsibilities of the enterprises have been established in decisions of party agencies, legislative acts and decrees of ministries. Thus in the law on foreign trade of 1974 it says: "The right to enter the foreign market should be granted when this corresponds to the foreign trade interests of the national economy and the economic organization has economic and organizational conditions and personnel necessary for successful foreign trade activity or these conditions can be provided."

The right to enter the foreign market is granted after the enterprises have developed a concrete program of foreign trade activity which corresponds to national economic tasks, and also when they have the necessary material and financial funds and specialists who know the market. Preference in the right to export is given to enterprises which hold leading positions in the production of a given product, which extensively use exported products or which need to have direct ties with foreign firms because of technical conditions. It makes sense to grant the right to import raw material, basic processed materials and semimanufactured products if the enterprise is the only or the main consumer of these materials or products, and also if the imported products are within its profile and are brought in on the basis of an agreement for specialization and cooperation. If when shipping to a foreign market the enterprise violates rules of foreign trade activity established by law, its right to foreign economic activity can be annulled.

A questionnaire conducted in 1980 by the Hungarian Foreign Trade Chamber among leaders of industrial enterprises made it possible to be precise: in the opinion of the enterprises, it is expedient to grant a direct right to import to enterprises primarily for the acquisition of spare parts on the foreign market. Many years of experience have shown that in these cases the foreign trade enterprise displays the necessary efficiency and speed.

The questionnaire also showed that the majority of managers of enterprises evaluate their possibilities of entering the foreign market realistically, and correctly determine the additional expenditures involved in creating their own foreign trade subdivision. The system of economic regulation opposes unsubstantiated plans of enterprises concerning independent entry onto the foreign market.

In 1980 the Ministry of Foreign Trade considered 25 requests from production enterprises to be granted the right to conduct foreign trade operations. Only five of them were denied for being unsubstantiated. In 1982 161 organizations and enterprises participated in foreign trade activity, including 38 specialized foreign trade enterprises which were under the jurisdiction of the Ministry of Foreign Trade and 123 production, trade and service enterprises. With respect to the total foreign trade turnover, the share of the latter amounted to 15-16 percent, and in exports to the socialist market -- 30 percent. In addition to operations based on the permanent right to engage in foreign trade, in 1981 173 one-time export permits and 208 import permits were granted.

The extensive granting of permanent and one-time foreign trade permits to production enterprises is closely related to the establishment of direct contacts between Hungarian producers and purchasers on the foreign market. In 1978 38 percent of the exports of machine building products and 27 percent of the imports were carried out by producer plants, and in 1982 they were responsible for almost half of the exports of machine building products.

Ties Between Industry and Foreign Trade Organizations

The question frequently arises: will the right of the enterprises to enter the foreign market not lead to the state's loss of its legal corporate status and its transfer to the autonomously financed organization; will this not stand in contradiction to the state monopoly on foreign trade activity? By no means. The state monopoly on foreign trade is reinforced in the Hungarian Constitution and the law on foreign trade. The state determines the foreign economic strategy, plans, organizes and supervises foreign economic activity, and concludes international agreements. The state creates an organizational system of foreign trade and grants economic organizations the right to guide it and manage its process.

Today the ties between industry and foreign trade have basically the form of an agreement -- either of a commission or of a partnership, or with a foreign trade enterprise.

With an agreement from a commission the foreign trade enterprise assumes the obligation to conduct a transaction on its own behalf, but for the guarantor. Its task is to conclude a foreign trade agreement and mediate in its realization. Since the conditions of the contract are determined by the guarantor himself, the commissioner is not responsible for anything and does not risk anything. The guarantor established the maximum limit price for imports and the minimum price for exports. For completing the foreign trade transaction the commissioner receives payment established by the contract.

Two main kinds of commission contract have taken form: the simple commission and the commission which provides incentive for profit and the most favorable price. With a simple commission the foreign trade enterprise receives a payment established according to the contract regardless of the difference between the actual and limit price: if there is a difference, all of it belongs to the guarantor. The commissioner can increase the payment coming to him only by increasing the turnover volume. It makes sense to apply this form in cases where the result of the foreign trade transaction does not depend on the activity of the commissioner, for example, in commodity turnover which is carried out at fixed prices with mandatory sales volumes. In commission contracts which provide for motivation to reach a more favorable price, the difference between the actual and the limit price is divided between the guarantor and the commissioner -- the percentage is established beforehand. The share of the foreign trade enterprise in the profit ranges from 10 to 29 percent. The maximum amounts of the commissioner's profit reach 50 percent, which rarely happens in practice, however.

The commission is the most widespread form of ties between industry and foreign trade. In 1979 the proportion of commission contracts in the country's exports amounted to 33.5 percent, and in imports -- 71.8 percent. But practice has shown that the such an agreement is frequently concluded not for economic reasons, but because of administrative and legal limitations. And although the role of industry in foreign trade activity is increased this way, the commission agreement is not without certain shortcomings. They were revealed in the questionnaire conducted by the Ministry of Foreign Trade among managers of industrial enterprises.

In the first place, the commission is to a certain degree compulsory in nature since the parties sign the contract not only when it corresponds to their economic interests, but also when they cannot come to any other agreement. In the second place, the capabilities of the foreign trade enterprise to conduct an active foreign trade policy are limited since all decisions related to the signing and implementation of the agreement are made by the guarantor. In the third place, the foreign trade enterprise is not sufficiently motivated to improve foreign trade work. For example the Transelektro foreign trade association frequently receives from its partners a limit price which cannot actually be achieved on the foreign market. Recently in the Hungarian press critical remarks have been made about the commission agreements, and there has been a tendency toward a certain reduction of their share in foreign economic ties.

On the other hand a greater role is being played by partnership agreements which are based on joint responsibility and motivation of the foreign trade and industrial enterprises. The types of these agreements differ depending on the sphere of mutual interest; the two main types have the names "Ameta" and "Pul".

With the "Ameta" agreement the motivation of the parties is determined by the sphere of sales. They jointly establish a calculated price, which includes direct and indirect expenditures on production and sales, and also the proportion of calculated profit. The profit is divided between the parties

according to a previously established ratio. The foreign trade enterprise usually receives no more than 20 percent. The producer is motivated to create products that can compete, and the foreign trade enterprise -- to improve foreign trade work. With this form of agreement the main source of income is the amount by which the actual price exceeds the calculated price (in exports).

With the "Pul" agreement, the sphere of mutual interest extends to production as well. The incomes of the parties depend on actual production and sales expenditures, which are brought together in a mutual account. The amount by which the incomes exceed the expenditures is distributed between the parties according to a ratio established in the agreement. This form does not require administrative influence since it contributes to the interests of the parties in reducing mutual expenditures and providing one another with mutual information on the condition of the market and production. The material interest here is greater than with the "Ameta," especially if the foreign trade enterprise invests its own funds (and it has the right to do this) in the industrial production.

As compared to the commission form, partnership agreements provide for greater mutual interest of industry and foreign trade and, consequently, longer-term and more stable ties between them. In 1979 they comprised 41 percent of the export agreements, and 5.4 percent in imports.

Bring industry and foreign trade even closer together has led to the appearance of new forms of partnership. They are divided into coordinational, foreign trade and economic.

A coordinational partnership can be based on commission ties between the parties in the form of a network of offices. Its goal is to coordinate the purchase and sales program as well as the decisions of the foreign trade and industrial enterprises. Thus the Khungaroteks foreign trade enterprise more than 10 years ago, on the basis of an agreement with the producers, created a textile office which was later used as a base for the organization of a coordination partnership. To do this they concluded agreements with eight branches of the textile industry and opened several new offices.

A foreign trade partnership can be created only on the basis of an agreement which is based on mutual interest ("Ameta", "Pul"). It is managed by a joint council of directors. It is authorized to make decisions on a group of issues stipulated in the agreement.

An economic partnership can be created only on the basis of a "Pul" agreement. The foreign trade enterprise places material funds at the disposal of industry for the purpose of developing production. Decisions made within the framework of the partnership apply also to the production sphere, and are the result of the overall economic activity.

Partnerships are now the most effective form of cooperation between industry and foreign trade. In the future their sphere of application will obviously expand.

Price Policy

A constituent part of the new system of management that was introduced in 1968 was improvement of the system of price setting. It was called upon to overcome the disparity between domestic and foreign prices. The development of a system of prices took place in close interconnection with the rates of currency exchange during the 1970's. Fluctuations in the level and proportions of prices were accompanied by changes in the system of rates of currency exchange and coefficients. At that time the adjustment of the rates of exchange and the coefficients played an active role in the price setting mechanism.

The sharp increase in prices on the world market in 1973-1974 was one of the decisive factors which conditioned the rise of domestic prices and the worsening of the proportions of foreign commodity exchange. The annual growth of wholesale and retail prices amounted to 3-4 percent. Because of this there were repeated regulations of prices: in 1973, 1975, 1976 and 1978. Special attention was devoted to providing for relative stability of domestic prices while at the same time keeping them flexible and able to react rapidly to changes in the foreign market.

Regulation of currency coefficients, before the introduction of the international system of floating exchange rates, took place in cases of revaluation or devaluation of foreign currency as compared to gold (official) parity. Before the spring of 1973, that is, before the general application of floating exchange rates, on this basis the exchange rates of individual currencies changed 10 times. Currency coefficients changed correspondingly. During 1973-1976, under the conditions of the floating exchange rates, the coefficients changed 11 times.

Since 1976 they have proclaimed an active policy of currency exchange which is directed toward providing stability of domestic prices and increasing the effectiveness of foreign trade activity. The currency forint was abolished, and at the same time for trade exchanges they began to use the currency coefficients which were not officially published previously and were now declared to be the foreign trade currency rates. At the same time the forint was revalued with respect to the transferrable ruble by 12.5 percent, and with respect to capitalist currencies, by an average of 8 percent. The commercial exchange rate of the forint as of 1 January 1976 was 35 forints = 1 ruble and 41.3 forints = 1 dollar.

In order to bring foreign trade and domestic prices closer together, to increase the orientational role of the price, and to strengthen the influence of prices on the domestic producers of export products and consumers of import products, beginning of 1 January 1980 a new price system was introduced. According to it, domestic prices are determined on the basis of foreign trade prices. Two major principles are in effect: prices for raw materials, processed materials and semimanufactured products are established on the basis of stable import prices in non-ruble accounts; wholesale prices for products of the processing industry are determined on the basis of export prices in non-ruble accounts. Foreign trade prices are used as the basis for the

formation of 60 percent of the prices of the processing industry. In the national economy as a whole, production with prices set on the basis of foreign trade prices provides for 35 percent of the produced national income.

Changes in the price setting system made it possible to carry out a restructuring of the system of currency rates. Beginning on 1 October 1981 there was a unification of the trade and nontrade rate of the forint with respect to convertible currencies. As a result, the currency rate had a greater influence on price setting, and the orientational role of the forint increased. The introduction of the new price system which was based on world price proportions, the gradual transformation of currency coefficients into currency exchange rates, and the creation of a unified rate for the forint along with other measures were directed toward strengthening the link between the production and foreign trade spheres. In the decisions of the 12th VSRP Congress (1980) it was emphasized: "More effective participation by our country in international division of labor raises complex problems both for production workers and for foreign trade enterprises. It is necessary to expand the entry of suitable production enterprises into the sphere of foreign trade and to strengthen the overall motivation of production and foreign trade enterprises."

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IMPROVEMENT OF ROMANIAN FOREIGN TRADE SOUGHT

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[Article by N. V. Feyt, candidate of economic sciences, Institute of Economics of the World Socialist System of the USSR Academy of Sciences (Moscow): "In Search of Effectiveness of Foreign Trade in Romania"]

[Text] The modern organization of foreign trade in Romania was defined in 1979 by the law on foreign trade activity and economic and scientific-technical cooperation of the Socialist Republic of Romania. It was subsequently augmented and developed by other legislative acts. The state carries out organizational and economic activity in the area of foreign trade through the Council of Ministers, which establishes the concrete forms of foreign economic ties and determines which economic organizations can conclude foreign trade transactions. They include the branch ministries, industrial associations and large enterprises.

Branch ministries are responsible for the fulfillment of the foreign trade plan in the branch, they direct the development of export production, and they ensure its effectiveness. Foreign trade subdivisions have been created in all the ministries. Moreover, the ministries supervise the activity of specialized foreign trade enterprises, the majority of which have been transferred to their jurisdiction. These enterprises thus have dual jurisdiction: the branch ministry and the Ministry of Foreign Trade and International Economic Cooperation (MVTMEK).

A large role in foreign trade operations is assigned to industrial associations which, by filling export orders, dispose of currency funds themselves. The association establishes direct ties with the foreign partner under the guidance of his ministry and the MVTMEK. Independently or in cooperation with foreign trade enterprises, it studies the market, develops a draft of an export plan, and makes contracts through the foreign trade enterprise or independently.

VTP's and Other Enterprises

The right to export directly has also been granted to large, economically powerful enterprises which have extensive foreign trade ties. There is not a

large number of them. But every enterprise, even if it does not enter into direct relations with the foreign market, bears responsibility for its foreign trade activity, which is carried out through an association or a specialized foreign trade enterprise. Representatives of the enterprise also participate in negotiations when the contract is signed.

The VTP, a specialized foreign trade enterprise, is the main unit of foreign trade operations. Along with the producer, it must not only provide foreign contracts for export assignments, but also check to make sure that export production proceeds in observance of their conditions. The foreign trade enterprise can create its own branches and agencies in the country and abroad. By a law of 1980 concerning operational self-management and autonomous financing, the functions of these enterprises were expanded: along with export-import and cooperative forms of collaboration, assignments were included for realization of the currency investments, which include services, warehousing, technical service, re-exportation, staffing, mediation and so forth. They are called upon to increase profit from foreign trade operations. Additionally, foreign trade enterprises have been put in charge of operations related to the construction in Romania of facilities for international bank credit, and also the functioning of joint companies.

The transfer of VTP's to the jurisdiction of branch ministries considerably increased the number of them, which led to breaking down foreign trade activity and the appearance of a number of smaller enterprises. The number of these was subsequently reduced because of the merging and reorganization of approximately 40 percent of them. As a result, by the beginning of the 1980's in Romania there were 47 specialized foreign trade enterprises and 3 specialized export-import subdivisions (under the Council for Culture and Socialist Education, Radio and Television and under the Central Council for Consumers' Cooperation in the country). Of these, 12 were under the direct jurisdiction of the MVTMEK.

Having granted a large number of organizations the right to conduct foreign trade activity, the MVTMEK increased its own role in the state foreign economic policy, particularly in the area of economic exchange. In conjunction with the State Planning Committee, the ministry draws up a plan for foreign trade and international cooperation and bears responsibility for its fulfillment. In conjunction with other organizations it participates in compiling and fulfilling the balance of foreign payments. The MVTMEK conducts negotiations and concludes agreements and conventions. The ministry coordinates and controls the activity of organizations that conduct foreign trade operations, regardless of their jurisdiction, and grants permission for all kinds of export and import transactions. The significance of the control functions of the MVTMEK is constantly increasing.

With the development of the country's foreign trade activity, the structure of the ministry has improved. Along with administrations that are responsible for regional development of ties, in 1974 an administration for international economic cooperation was created, and in 1981 -- an administration for construction and installation work abroad.

Other central state agencies are also contributing actively to foreign economic activity: the State Planning Committee, the Ministry of Finance, the Romanian National Bank and the Foreign Trade Bank, the Ministry of Transportation and Tourism, the State General Inspection of Product Quality, and the Romanian Chamber of Commerce and Industry. The role of financial agencies has especially increased.

The development of foreign trade activity has required improvement of planning. They have changed the policy for drawing up plans, their indicators and methods, with the goal of increasing the participation of the producers in the development and substantiation of foreign trade plans and cooperation, and also providing for balance of foreign trade exchange.

The Role of the Ministry

The MVTMEK bears basic responsibility for the development and implementation of the foreign trade plan. In conjunction with the State Planning committee, it draws up the plan on the basis of proposals from the ministries. At the same time, along with the Ministry of Finance, the National Bank and the Foreign Trade Bank, the MVTMEK develops the balance of foreign payments. The final variant of the plan includes assignments for exports, imports, cooperation, the trade and payment balance and the currency plan.

Assignments of the state plan for foreign trade and cooperation and currency revenues and payments are established for the ministries and people's deputies by the republic Council of Ministers. The ministries and people's councils distribute these assignments to the associations, and the latter -- to the production associations. The export-import plan is given to the enterprise 6 months before the beginning of the planning period.

Since 1981 organizations receiving assignments for the production of export products have had the right to determine the corresponding assignments for their subsuppliers.

The planning indicators from which the assignments are established from above show that a great deal of centralization has been retained in planning. According to the law on planning socio-economic development, the plan for exports is drawn up in physical and value indicators and is distributed to the receiving bodies by the quarter and by the month. In the import plan they separate industrial imports (raw materials, processed materials, licenses) of investment equipment and objects for widespread consumption. Everything is planned in value indicators, but imports of raw and processed materials are also planned in physical indicators.

Contract prices are used for planning exchange with socialist countries, and in all other cases they use calculated prices that are based on the prices that were actually reached during the 9-12 months preceding the development of the plan.

The enterprise and association is given the plan for exports and imports according to value and physical volume and also the geographical distribution.

The plan of the foreign trade enterprise includes indicators for the sale of export products and the currency investment from operations on the foreign market. In 1978, by a decision of the Plenum of the RKP Central Committee, a new planning indicator was introduced: the export-import balance. The operative instrument for its regulation is the plan for revenues and payments. The indicator was introduced with the purpose of regulating the balance of export and import operations even on the micro-economic level.

Contractual relations occupy an important position on the export-import level. Preliminary reinforcement with a contract has made it possible to change over to the production of products for which there is a guaranteed demand. Since 1978 there has been a policy in effect whereby the plan for deliveries of exports should be supported by long-term contracts, and production for which there is no demand is prohibited.

Since 1978 the foreign trade enterprise (with the participation of the association and on the basis of agreements signed by the MVTMEK) has been concluding contracts with both domestic and foreign partners. The law on labor self-management and autonomous financing in foreign trade, which was adopted in 1980, envisions the possibility of a VTP's entering the foreign trade market as a commissioner and with its own account. Correspondingly, the VTP concludes with its domestic partners a commission foreign trade contract or a contract for the delivery of goods for export. The latter has a limited sphere of application and is concluded only in order to sell the commodity flexibly on the foreign market.

The contract system makes it incumbent on the foreign trade enterprise to control the correspondence of production, product quality and delivery times to the conditions of the protocol that has been signed with the foreign partner. Therefore the VTP receives the commodity through its representatives or specialists who have been brought in. At the same time the quality of the goods is controlled by the State General Inspection. The foreign trade enterprise receives the commodity regardless of whether it is entering the foreign market independently or on behalf of a producer-partner. The producers, in conjunction with the VTP's, are fully responsible for failure to meet the conditions of the foreign contract.

Autonomous Financing in Foreign Trade

Since the beginning of the 1970's the "rate of currency reimbursability" and the "net currency income from exports" have been important indicators. The former reflects the ratio between domestic and foreign prices for exported and imported goods; for exports it is calculated by comparing the cost of the good in the wholesale price of industry and the foreign price under the conditions of the f.o.b. border exporter. The effectiveness of exports is inversely proportional to the coefficient of currency reimbursability. When determining the effectiveness of imports, the prices are set either at the level of wholesale prices of domestic analogs or according to stable price lists. The effectiveness was considered to be the higher, the greater the sum by which domestic prices exceed foreign ones. This kind of calculation gave the enterprise the opportunity to check on the correspondence of its products

to the market demand. But frequently material-intensive products produced greater results. A certain adjustment of this indicator provides for the net currency income from the exporter. It is calculated by comparing the foreign price of the commodity not counting the value of the imported (or exported) raw material and its full foreign price.

However the calculation of the effectiveness has not made it possible to directly link the autonomous financing of the enterprises to the prices of its goods on the world market, since before 1981 foreign trade enterprises settled accounts with the producer at domestic prices at the time of the delivery of the goods for export, regardless of the currency received. Moreover, this system of accounts did not contribute to coordinating export and import operations, and, under conditions in which the utilization of imported raw material had increased sharply and the prices for it had increased, it did not contribute to the task of regulating export and import payments.

The provisions in the law on labor self-management and autonomous financing in foreign trade activity and international economic cooperation of 1980 were directed toward strengthening the currency independence of all foreign trade units. The law makes it incumbent on the enterprises to cover expenditures through revenues from their own activity and to make a contribution to state currency reserves. Planned importation can take place only with the availability of funds from export.

What has become the main instrument of the principle of financial independence has been the system of balances, including for foreign trade -- the trade balance, payment balance, and the balance of foreign demands and commitments. Since 1979 the export-import balance has been a constituent part of the autonomous financing of the enterprises. The association bears the main responsibility for the realization of the export-import balance, but the producer enterprise develops the balance. The balance is approved along with the planning assignments and includes exports (along with deliveries of subsuppliers under cooperation), imports (including within the framework of measures for international economic cooperation) and the balance of these aspects of trade. Accounts are kept for the various kinds of payments.

The plan for currency revenues and payments contains all kinds of currency funds, including credit accounts and interest, and also the balance of the currency plan. The planned amount by which incomes exceed expenditures is deposited into the state centralized currency fund.

The balance method has been applied in the autonomous financing activity of state enterprises since 1981. Under the guidance of the higher organizations, the VTP develops a budget of incomes and expenditures, including all payments in leus and in currency translated into leus. The VTP has its own plan for revenues and payments. The activity of the VTP is evaluated according to the balance results, and if the enterprise does not realize the income envisioned by the budget for a long time, it is obligated to curtail its activity and personnel.

At the level of the ministries and associations the results of export-import activity are registered in the indicators of currency revenues and payments. The commercial bank balance is compiled from them. Based on bank accounting, it is distinguished from the export-import balance of the enterprises which is established from customs documents. This distinction is the greater, the more extensively advance or credit deliveries are used in trade operations. The commercial bank balance makes it possible for the ministries and departments to keep track of their condition and to take measures if necessary. At the level of the national economy, the Ministry of Foreign Trade, the Ministry of Finance, the Gosplan, the National Bank and the Foreign Trade Bank develop the trade balance with a breakdown according to the various groups of countries and kinds of payments. The payment balance is totalled up monthly, quarterly and for the year, taking into account the balance on the books from the preceding period.

Since 1979 the balance of currency demands and commitments has been the main operational instrument used to check on the plan for the balance of foreign payments. Like the plan for currency revenues and payments, at the level of the enterprise it reflects the country's currency rights and responsibilities with respect to its foreign trade partners in commercial and noncommercial operations, credit that is granted and received, and rights and responsibilities to participate in joint organizations abroad.

The balance system has increased the interconnectedness of export and import operations, and on the whole it has contributed to equalizing the country's trade balance. But balance regulation even at the level of enterprise has complicated other problems, and above all the development of specialized exports. The enterprises have strived to export their products directly, which has frequently hampered the effectiveness of exchange. "The principle of balance of exports and imports at the level of the enterprise," it was written regarding this, "should not be reduced to the simplistic idea that all enterprises should become direct exporters of products to the world market ... , the concept of self-management does not preclude the need for specialization of exported products, and, on the contrary, it would be desirable for only those enterprises, subbranches and branches which have relative advantages on the international market to be oriented toward exports."*

Other enterprises should participate indirectly, as subsuppliers. But this path requires improvement of the economic mechanism and its planning and financial accounts. But so far economists think that the redistribution of income from exports should be controlled by the ministries or other central agencies. "In order to provide for currency self-management, it would be of immediate practical significance to develop a unified methodology for control over export revenues and provision of payments for imports, taking into account that in order to make them correspond and to synchronize them, it is necessary to act right at the moment when the contracts are concluded."**

*REVISTE ECONOMICA, 1981, No 47, p 12.

**Ibid., p 13

In autonomous financing a special place is occupied by material incentives for enterprises for conducting effective foreign trade operations. The financial and economic indicators of the work of the enterprise is evaluated depending on the fulfillment of the plan for export deliveries, streamlining of imports, and the effectiveness of foreign trade operations.

Since 1979 a higher level has been established for the of profitability of the production of exported products. To do this, deductions for the value of the net output into the state budget have been decreased. This benefit applies only to products with a high degree of development, including those delivered under interplant cooperation. The interest rates for the reduction are differentiated according to the goods and depending on the form of payment.

The rights of the enterprises to utilize the incomes received from exports have also been expanded. Up to 80 percent of the currency (including half which remains with the enterprise itself) received from overfulfillment of the export plan remains at the disposal of the enterprise. It can be used for the development of production and the introduction of new technology. Overfulfillment of the plan for exports and economy of imported resources are also reflected in the wages of the workers.

Up to 20 percent of the profit from overfulfillment of the export plan is deducted into the fund for worker participation in profit, but in an amount that does not exceed 1.5 percent of the entire value of above-plan exports. The enterprise may use 2 percent of the sums in excess of the planned revenue from exports for organizing excursions abroad.

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MODERNIZATION IN INDUSTRIALLY DEVELOPED COUNTRIES DISCUSSED

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[Article by A. S. Belorusev, candidate of economic sciences, All-Union Scientific Research Institute of Market Conditions of the USSR Ministry of Foreign Trade: "Modernization of Production in Developed Countries"]

[Text] The industrial crisis of the end of the 1970's and beginning of the 1980's was the cause of constant underloading of the production capacities of capitalist enterprises. In 1982 the sets of metallurgical equipment in plants in the EEC countries and Japan operated at only 50-60 percent of the planned capacity, and in the United States even at 30-40 percent.

The halting and disassembly of unprofitable equipment has become an ordinary phenomenon. Unprofitable plants are sometimes bought up and modernized by successful firms. The American company Seko (the state of Illinois) was forced to sell its metallurgical plant to the firm Milton Manufacturing Co. The new owner immediately announced the construction a modern section rolling mill for rolling reinforced steel, circular profiles and billets for producing mine reinforcement bolts. Moreover the Milton Manufacturing firm intends for its new products to be of high quality and produced with minimum production outlays, which will make it possible to sell them at competitive prices.

Modernization and Reorganization

Such examples convince us that modernization of enterprises involves not only the technical side, but also changes in the organizational structure. In the FRG, for example, the renovation of the largest metallurgical combines in the Ruhr area preceded the merging of the giant producers of steel products, Krupp Stahl and Hesch Werke. Before the merger each had its own powerful technical facilities: Krupp Stahl was known for the high quality of its nonrusting and other special alloy steels, and Hesch Werke had won for itself a good reputation as a producer of sheet steel with anticorrosion coatings -- galvanized and lead-coated. About 2 billion marks were allotted for the modernization of the plants of the Ruhrstahl Association, one-third of which were granted by the FRG government. It is also acquiring financial assistance from EEC funds. During the course of the reconstruction certain obsolete sets

of equipment were halted and disassembled. In the technological chain after the machine tools for hot and cold rolling which previously belonged to the Krupp Stahl company, there will be newly constructed lines for galvanized coating.

An example of an even sharper change in the organizational structure of renovated enterprises is the modernization in the United States of the large Rouge Steel metallurgical combine of the Ford Motor company, which led to its transfer to the ownership of a consortium of Japanese firms headed by the Nippon Kokan corporation. At the beginning of 1982 an agreement was signed between the large American metallurgical combine Rouge Steel and the Japanese corporation Nippon Kokan regarding the installation in this plant of a machine for continuous smelting of billets at a cost of 200 million dollars. It will make it possible to reduce the expenditure of energy, to increase labor productivity, to improve product quality and to expand the assortment of steels; it is also intended to construct a line for galvanized sheet metal valued at 100 million dollars. The output of sheet steel with anticorrosion galvanized coatings was brought about by the more rigid requirements of automotive construction firms on the anticorrosion properties of the materials. In particular, the Chrysler corporation intends in 1985 to offer the purchasers of its automobiles a guarantee of the anticorrosion properties of the metals which are used.

A couple of months after the signing of the agreement the Japanese firm announced its intention to spend approximately 1 billion dollars to buy a controlling block of shares of the Rouge Steel plant from the Ford Motor company. The Nippon Kokan corporation, which exports steel products to the United States, has decided to produce steel closer to the sales market. It intends to restructure the production of steel products at the same plant following the model of its new enterprises which are located in Japan. Japanese equipment will be shipped to the United States using credit from the Japanese export-import bank. The Nippon Kokan corporation intends to deliver products of the Rouge Steel plant not only to automotive enterprises of the Ford Motor company, as before, but also to General Motors, Chrysler and also the Japanese firms Honda and Nissan, which will soon open up automotive plants in the United States.

Modernization and Financing

The modernization of enterprises is far from always completed on time, most often because of financial difficulties. One of the largest producers of steel in the United States, the United States Steel Corporation, in 1981 made an order for a large manufacturer of metallurgical equipment, the Mesta Machine company to produce lined boxes for intermediate rewinding of hot coils of steel. This innovation was intended to reduce losses in the process of rolling. Financial difficulties in the middle of 1982 forced the client to delay the assembly of the boxes. As a result, the Mesta Machine company could not, as it had hoped, use this order to compensate for its own constant losses during the past 3 years.

Investments in the metallurgical industry in recent years have differed in volumes and tendencies in the various capitalist countries. In the EEC they have decreased, but in the United States and Japan they have risen somewhat. Moreover, capital investments in the production of iron and steel in all of the capitalist countries at the beginning of the 1980's were used for the disassembly of obsolete and unprofitable equipment; for modernization of production in order to economize on labor expenditures, energy and raw materials and to improve product quality; on sets of equipment for producing progressive new kinds of metal products -- from highly durable, low alloy steels, sheet metal with anticorrosion coatings, and pipes of the petroleum and gas assortment. Despite the crisis in the metallurgical industry, certain companies, within the framework of programs for updating production, are constructing modern sets of equipment, taking advantage of the low cost of construction materials and services. Moreover, they calculate that these products will be more competitive on the market than products that are produced by other firms with outdated equipment.

Standard Ways of Modernization

We shall demonstrate typical innovations using the examples of individual productions. When coke and chemical complexes are renovated there is increased interest in installations for dry slaking of coke. The Japanese corporation Nippon Kokan acquired the license for the manufacture of these installations from the Soviet Union as early as 1972. Improvement of the technology of dry slaking and the design of the equipment made it possible to increase their productivity, to reduce the number of service personnel, and to reduce the amount of pollution of the environment. In 1982 the Japanese firm Kawasaki Steel assimilated the production of coke in two of these newly constructed installations with a productivity of 100 tons of coke per hour each. The company is counting on recouping expenditures on them (24.8 million dollars) in 3 years, mainly from the electric energy obtained from the steam which is discharged during the slaking of coke. The utilization in turbines of the 51 tons of steam formed during an hour makes it possible to obtain 17,500 kilowatt-hours of electric energy. The installations for dry slaking of coke are not becoming more widespread because of their high cost. Both European and American firms are working on reducing it.

In order to make blast furnaces more economical, they are expanding the use of turbogenerators which operate on blast furnace gas. In Japan, for example, in the 1981-1982 fiscal year such turbogenerators produced 2 billion kilowatt-hours of electric power or about 5 percent of the overall amount that was consumed by Japanese enterprises with a full metallurgical cycle. At the beginning of the 1980's they planned blast furnaces in which 1 ton of iron required no more than 490 kilograms of coke and fuel oil as compared to 750 kilograms 2 decades ago. The installations used for economizing on coke and fuel oil include, for instance, the system of blowing atomized coal into the furnace through tuyeres, which was developed by Japanese firms. It is controlled by microprocessors and is easily installed on the furnace, since it operates on compressed air from traditional blowers. The system's capacity is 1,000 cubic meters of coal and air mixture per day, and the cost (including the coal pulverizers, bunkers and conveyers) is about 12 million dollars.

When constructing new blast furnaces, preference is given to large furnaces with a volume of 3,000-5,000 cubic meters. Furnaces with a hearth diameter of 10 meters are intended for a productivity of 1.5 million tons of iron a year, and those with a diameter of 12.5 meters -- for 2.5 million tons. When refurbishing old blast furnaces, throughout the world they widely use nonbell charging equipment with an original design of the [Pol' Vyurt] firm (Luxembourg) which do not have large parts in the upper area of the furnace (bells and cones) and which provide an optimal distribution of the charge. Such equipment provides for a uniform course of smelting, eliminates hanging and settling of the charge, and reduces the expenditure of coke. The loading of the charge materials and control of the thermal conditions of modern blast furnaces is controlled by electronic computer systems. The cost of the computer is equal to about 1 percent of the cost of the blast furnace.

An example of radical renovation is the restructuring of the blast furnaces at the plant of the [Kosipa] company in Brazil, where the volume of furnace No 1 increased from 1,700 to 4,000 cubic meters, and No 2 -- from 2,700 to 3,300 cubic meters (its productivity is 6,000 tons of iron a day). It is intended to spend 1.8 billion dollars on renovation of the coke batteries, the construction of two 130-ton oxygen converters and three single-channel machines for continuous smelting of billets (MNLZ), increasing the productivity of the hot sheet rolling mill from 110,000 tons to 180,000 tons a month, and also increasing the capacities of the thick sheet rolling mill to 500,000 tons of rolled metal a year.

The long-range alternative to blast furnace production is direct reduction of iron. For more than 2 decades now heavy machine building companies have been receiving more and more orders for installations for direct reduction of iron from the blueprints of the owners of the patents for this process. By the beginning of the 1980's the capacities of existing installations like this and those intended for construction in the capitalist world exceeded 30 million tons. Direct reduction is especially promising in those countries where there is inexpensive fuel and iron ore, but there is little coking coal and not enough scrap metal. This is typical of the majority of developing countries of Latin America, Africa, the Near East and Southeast Asia.

Before the beginning of the 1980's about 90 percent of the installed capacities were installations intended for the application of natural gas. In the future, apparently, the most widespread will be installations intended for coal, products of coal gasification, coke gas and so forth, especially in the industrially developed capitalist countries.

In practically all of the industrially developed capitalist countries there are now heavy machine building enterprises whose products include components for oxygen converters. According to predictions of the James F. King Consultant firm (Great Britain), the proportion of oxygen converters in the overall steel smelting capacities of the capitalist world is increasing. Computers are used actively to control the loading of the converters, to control the smelting process, and to calculate the alloy additives. The construction of converters with bottom fuel-oxygen and combined blasting and the utilization in the shops of combined reservoirs with one installation for

oxygen blasting are expanding. Among the most promising are sets of equipment with capacities of 150-300 tons.

Another progressive steel smelting process is the smelting of steel in electric furnaces. In the United States, for example, its proportion has increased from 8 percent in 1954 to 30 percent in 1982. While during the 1970's the average annual increase in the smelting of steel in the capitalist world amounted to 1.8 percent, electric smelting of steel increased by 5 percent. At the beginning of the 1980's the proportion of electric steel smelting capacities reached approximately 22 percent of the overall capacities for producing steel in the capitalist world. Modern electric arc furnaces with capacities of 100-200 tons with superhigh capacity transformers and controlled by electronic computers are equipped with air-cooling walls and crown and a Japanese system of fuel-oxygen burners of the Nikko type. Included among the promising designs is that of furnaces that discharge the liquid metal through the bottom. Furnaces with these design features in combination with installations of nonfurnace processing of steel -- vacuuming in the bunker, argon-oxygen refining and so forth -- determine the design of new steel smelting shops for smelting both ordinary carbon steel and high-quality alloy steels.

The modernization of arc electric steel smelting furnaces is most frequently for the purpose of saving on electric energy. The American firm Saul Steel in 1981 and 1982 alone spent 3.6 million dollars on renovation of electric furnaces, and it looks forward to saving one-fourth of the amount of energy used before the renovation. Expenditures on the renovation will be recouped in 3 years.

The oxygen converter and electric steel smelting processes are crowding out the Marten furnace production of steel throughout the world. Many metallurgical enterprises are disassembling Marten furnaces and installing oxygen converters in the buildings that housed the old shops. But along with this there are firms which find it expedient from the standpoint of expenditures to modernize Marten equipment. Among the various methods of renovating Marten furnaces, the method proposed by the Korf Technologies company (United States) has become the most widespread in capitalist countries. This method is based on blowing out the bath of the Marten furnace with a tuyere which sends oxygen through the rear wall below the level where the slag and metal are separated. The tuyere is cleaned with stream of liquid hydrocarbons and nitrogen. According to the experience of many firms, capital expenditures on re-equipping Marten furnaces by this method are recouped in several months, and the technical and economic indicators of the smelting are increased because energy expenditures are reduced by 50-75 percent, expenditures of refractories and oxygen -- by 50 percent and ferrous alloys -- by 15 percent, and the output of suitable metal is increased by 1-2.5 percent.

Among the sets of equipment for metallurgical plants, the ones that have been in greatest demand during the past decade have been the MNLZ's which, in the opinion of many metallurgists, were the most important innovation in metallurgical production in this century. The rapid spreading of the MNLZ is shown by the following figures: while in 1960 throughout the world these

machines were used to smelt 0.3 percent of the smelted steel, in 1975 it was 15 percent, and in 1980 -- 31 percent. The two-channel MNLZ's of the radial type have been most widespread. By 1982 there were more than 400 of them in the world. The average cost of one of these sets of equipment has reached 200 million dollars, which, in particular, was a stimulus for the development and installation of less expensive smaller MNLZ's of the horizontal type. In 1982 there were 17 of these machines in the capitalist world.

It is typical of rolled metal production to have a high degree of automation of modernized equipment and widespread use of pipe rolling mills, pipe welding equipment, wide-base, reversible, four-high thick-sheet mills, six-roll stands for hot rolling, continuous machine tools for producing wide-base beams and highly productive small mills with rolling speeds of up to 85 meters per second. At the same time the demand is increasing for lines for applying various anticorrosion coatings to steel strips.

The extensive introduction of automation of the entire metallurgical cycle has entailed expansion and strengthening of the ties between the firms that specialize in heavy machine building and instrument building companies which complete the sets of metallurgical equipment with special electronic computers, microprocessors, automatic manipulators with program control and also complicated control and measurement instruments.

The main suppliers of the metallurgical equipment necessary for the renovation of plants are usually large heavy machine building enterprises which have a considerable stock of metal cutting machine tools and have stable long-term ties with a large group of subsuppliers who provide components -- heavy metal elements and pipes, conveyors, reducers, electrical equipment, hydraulic and pneumatic units, control and measurement instruments, electronic computer systems and fireproof materials.

New Phenomena

Recently, along with machine building firms, orders have begun to be filled more and more frequently by metallurgical companies which have experience in the utilization of technological processes. They manufacture and deliver individual sets of equipment. This phenomenon is typical of West German and Japanese companies.

Thus the Manesmann-Demag (FRG) firm which produces the MNLZ, rolling mills and electric arc furnaces, in addition to the equipment offers enterprises which are carrying out reconstruction the entire modern technological process for smelting steel in oxygen converters or electric arc furnaces with subsequent processing of the steel outside the furnace -- desulphurization, vacuum processing, and so forth -- which have been developed at plants of the corporation. In order to improve its ability to compete, the firm takes advantage of foreign licenses. Thus when designing and producing six-roll wide-base mills it purchased a license from the Japanese firm Hitachi. These mills have a whole number of advantages: the surface sheet of steel is of high quality after rolling, it has more rigid tolerance for various thicknesses of profiles, and they reduce metal wastes during the process of rolling. As of

the beginning of the 1980's in the FRG alone more than 20 rolling shops were equipped with six-roll wide-base mills.

The largest producer of iron and steel in Japan, Nippon Steel, also manufactures a large assortment of metallurgical equipment and offers it to the consumers along with technology developed in its plants. By the beginning of the 1980's the firm offered its technology along with the equipment (mainly blast furnace, steel smelting and rolling equipment) in 35 countries. The strong points of the technology and designs of the equipment from this Japanese corporation include the fact that it is economical, which is achieved as a result of reduced expenditure of fuel oil and increased blasting with coal powder in blast furnace production, the introduction of continuous melting of steel and "direct rolling," the utilization of generators for producing electric energy using blast furnace gas, and salvaging of the heat from discharge gases.

On the modernization services market there has been more activity on the part of firms which specialize in the transfer of modern technological processes, the installation of new devices on old equipment, the construction of purification installations for bringing old sets of equipment in line with environmental protection norms, the performance of capital repair, the introduction of automation of technological processes, the rebuilding of furnaces in the existing hearth jackets, planning of the modernization of enterprises, provision of technical consultations, the performance of organizational and administrative functions, the adjustment and startup of equipment, training of the client's specialists, economic substantiation of modernization, and a whole number of other technical services. The staffs of such firms include experienced design engineers and consultants. As a rule, they do not have a production base and therefore they enlist in their activity metallurgical plants which have experience in the area of modern technological processes and also heavy machine building enterprises which produce metallurgical equipment.

Because of the broad scope of renovation of metallurgical enterprises, firms have appeared which specialize in the development of plans for modernization of production and deliveries of equipment for carrying out the modernization. Thus Ferrco Engineering (Great Britain) takes orders for planning and carrying out reconstruction of rolling shops. According to its contracts with the clients, its duties include studying the production processes in the rolling shops, finding the "bottlenecks" and developing proposals for eliminating them. When it signs a contract Ferrco Engineering guarantees increased profitability of the client's enterprise as a result of the renovation. In modernization it leaves as much of the previously installed equipment as possible under the condition that its operation does not affect the technical and economic indicators of the enterprise which are envisioned by the plan for renovation.

If the metallurgical plants do not have strong design bureaus and experience in the introduction of the latest technological processes, they take advantage of the services of other firms, frequently foreign ones. Thus Japanese firms actually do not independently design light-section and wire mills, but use

foreign licenses for their production. The practice of enlisting specialized firms, both national and foreign, for renovation has become extremely widespread. Among the designers and manufacturers of metallurgical equipment one can see a clear tendency toward narrower specialization in various kinds of services and the lists of equipment.

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BOOK ON CAPABILITIES OF BANK ACTIVITY REVIEWED

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[Review by N. Ya. Petrakov, doctor of economic sciences, professor, Central Economics and Mathematics Institute of the USSR Academy of Sciences (Moscow) of the book "effektivnost' kapital'nykh vlozheniy i bankovskaya deyatel'nost'" [Effectiveness of Capital Investments and Bank Activity] by L. V. Braginskiy, "Nauka", Moscow, 1981, 2,200 copies, 187 pages]

[Text] The book we are discussing is valuable if only because it is about the bank.

The ideas of many business executives about bank activity, as a rule, are extremely one-sided and approximate, and are limited to individual operations like the collecting payments or issuing wages. Alas, there are justifications for this kind of evaluation.

In economic literature the number of works especially devoted to problems of bank activity are extremely limited. And this pertains perhaps even more to one of the most important aspects of its work -- long-term credit. The reader may look through the catalogues of books that have come out in the last couple of years, particularly those published by the "Finansy i statistika" publishing house, he will not find among them a monograph on this crucial problem.

The meager amount of literature on bank activity bears witness to the fact that we have not yet recognized the rich possibilities of influencing socialist productivity which the bank has at its disposal. And yet this problem arose even at the beginning of Soviet power. Here it is quite appropriate to recall V. I. Lenin: "The bank policy... should gradually, but steadily be pointed in the direction of transforming the banks into a unified apparatus for bookkeeping and regulation of the socialist organizational economic life of the entire country as a whole."*

*Lenin, V. I., "Poln. sobr. soch." [Collected Works], Vol 36, p 230.

It seems that so far one can speak only of a set of certain forms of bank activity -- organizing accounts in the national economy, extending credit, issuing money, and so forth -- but not about bank management, about the fact that the bank plays the role of one of the regulators of economic life.

These figures concerning the Gosbank's work are known: 4,400 of its institutions serve more than 770,000 clients -- enterprises and organizations. They have opened more than 4 million regular, current, loan and other accounts. During 1981 short-term loans were granted (according to the sum of money issued) in the amount of 1,722.3 billion rubles. Multifaceted relations link the bank to autonomously financed and non-autonomously financed (budget) enterprises, organizations and kolkhozes. As a result, the bank, operating with 4 million various accounts, keeps up with all current economic policy and has the opportunity, at least potentially, to step up economic processes, changing them over to the basis of intensification.

And practice confirms this idea.

The sphere of bank influence in the area of reproduction of fixed capital has tended to expand in recent years. The decree of the CPSU Central Committee and the USSR Council of Ministers of 12 July 1979 greatly increased the scope of credit for all participants in the production process -- contracting construction and installation organizations, design offices, and enterprises that supply equipment. Gradually (although somewhat more slowly than expected) there has also been an increase in the proportion of long-term credit in the sources of financing capital investments: it now comprises approximately 8 percent, and, according to certain predictions, will reach 15-20 percent in the next few years.

Regardless of how positive the aforementioned tendency may be, it is not enough. The bank can exert a significantly more serious influence on all stages of the investment process and intervene directly in the activity of all of its participants.

People frequently ask: is it not possible to do without daily bank control? After all, there is a ramified system of branch control, including financial. Although these questions come most frequently from practical workers who are referring to the surplus of controllers and their insufficient independence, one can, unfortunately, also hear extremely skeptical judgments from economists about the expediency of expanding bank functions in a centrally controlled economy. Here we encounter the popular idea that centralized control is exercised only with the mediation of the national economic plan which is developed by the Gosplan. As for the credit, cash and other plans of the banks (Gosbank, Stroybank), they are regarded somehow as secondary and based on the former. Thus the active position of bank plans as instruments for distribution relations is reduced, and the concept of "planned" is equated with "Gosbank controlled."

Yet centralized control of the socialist economy should be carried out through a system of plans. This is why V. I. Lenin spoke of the need for the development of a unified plan which embraces all aspects of national economic

activity -- its goals and resources. It should be especially emphasized that the bank does not undermine the functions of the Gosbank and by its very nature is incapable of doing this. As a credit institution the bank should not answer the question: what to build and where, how much this should cost, and what is primary and what is secondary.

Its role, to put it briefly, consists in stimulating effective expenditure of the funds that are allotted, that is, complete and prompt return on every invested ruble. And the very arsenal of means for this belongs specifically to the bank. Operating with deadlines for the repayment of loans, the bank uses interest to provide for successful fulfillment of the national economic plan, and transforms the norm of effectiveness of capital investments into concrete stimuli and commitments.

I should like to draw attention to the fact that methods of bank control correspond to the concepts of cybernetics. From the standpoint of this science, the effectiveness of control depends largely on the clarity of the feedback. It is bank control that is arranged on the basis of a combination of special-purpose, planned distribution of resources, mainly in the form of credit, and their return to the same loan fund from which the money was borrowed. If this return does not take place, this is a signal that all is not well with the borrower and that he has not utilized his production potential effectively enough. And new loans too, taking into account the information received, are issued at different interest rates.

The very nature of credit, which is quite correctly defined as the purchase and sale of monetary funds for a particular period with normed payment, presupposes an economic basis for the relations between the state agency in the form of the bank and the borrower-enterprise. By "buying" the additional monetary resources the enterprise gains an opportunity to utilize additional production capital, expand its scale, improve its products list, and so forth, and all this does not happen without control, not by the honor system, but with an economic commitment to utilize efficiently the resources that have been received. The payment deadlines and the interest rates on the credit stand guard over this commitment.

It is interesting to see how centralization and decentralization are combined under the conditions of the action of credit. The independence of the enterprise (to take out loans or not to is only within its competence) plus its motivation (additional investments increase profit) at the other end are manifested as the direct economic responsibility of the borrow-enterprise, which is also one of the bases for including the corresponding assignments in the state plan.

L. V. Braginskiy's book reveals the bank's potential as the controller of a branch of the national economy. The importance of this circumstance is especially clear against the background of the fact that the bank, having at its disposal very valuable monetary information and means of utilizing it actively in the control mechanism, now needs only to establish the shortages and report them to the higher organizations.

Somehow it has turned out that the financial activity in all units of the economy has been separated by an invisible screen from production and physical-substantial activity. V. I. Lenin taught that distribution is the method, the instrument and the means for increasing production. Financial distribution instruments reflect not only the complicated relations involved in creating and realizing the value of the product that is created, but also a means of accumulation. All the circulation of the value of the product takes place with the help of money, and therefore it reflects the process of reproduction in each of its stages and in each unit of the national economy. The economy has no other instrument like this. Not one of the various kinds of statistical accountability makes it possible to register all the changes during the course of production, exchange and sales of the products.

The author of the book under consideration leads us in to the "holy of holies" of bank activity. On the basis of a theoretical interpretation of the processes that take place in the sphere of reproduction, he reveals the essence of the application of the various mechanisms with which the bank extends credit. This makes the monograph useful not only to economists, but also to practical workers. For we must admit that it is well known that business executives have too cautious an attitude toward long-term credit. Frequently it is even forced upon enterprises which for one reason or another have not managed to mobilize internal resources or to obtain allocations from the budget. But such a situation is a result of the fact that there is no real autonomous financing in the sphere of capital investments: conditions are too beneficial for obtaining various kinds of subsidies, and even today's "cheap" credit cannot compete with them. The weakness of autonomous financing and its formal nature limit the sphere of long-term credit, which, in turn, weakens autonomous financing. Branch management is much more effective with long-term credit than without it.

A parallel financial and credit system, intrabranh redistribution of monetary resources (profit, amortization) weakens the economic liability of the ministry for the effective investment of funds. And it is certainly no accident that, as Stroybank statistics show, the construction projects which are financed with bank credit are put into operation more quickly than those financed from the budget since here the element of interest and material liability has been added to other stimuli.

In L. V. Braginskiy's book long-term credit and the prospects for its development are related to two economic problems -- the condition of autonomous financing relations and the conditions for the reproduction of fixed capital. And the author makes a contribution to filling in the "blank spaces" of which -- alas! -- there are many in the sphere of expanded reproduction of fixed capital.

How, for example, does one determine the optimal sum of intra-economic accumulations for the enterprise? Translated into the language of practice, this question can be formulated this way: what sum of profit should be left at the disposal of the enterprise, based on its contribution to the national economic result, and what sum can be granted to it in the form of credit or financial subsidies? The author suggests the normative of expanded

reproduction to solve this problem (p 43) and also the normed output-capital ratios of the enterprises (p 48). These new and well substantiated proposals are useful in practice if only because they create a basis for determining the limits of self-financing of the enterprises. Now these limits are extremely vague, they differ depending on the existing conditions and the levels of accumulation (or profitability), they are related to deviations of average branch expenditures from established prices, and there is no serious scientific explanation for the amplitude of the deviations.

On the whole, the aforementioned suggestions make it possible to place a scientific foundation under the prices of the means of production. In addition to the evaluation of socially necessary expenditures as expressions of the usefulness of this kind of fixed capital, the criteria of price setting make it possible to take into account the need for resources of accumulation and thus coordinate the interests of the state with the local autonomous financing interests of the enterprises.

The category "demand for capital investments" is rarely brought up in economic literature. There is the opinion that in a centrally controlled system of capital construction this demand does not have essential significance. But the author convincingly argues that the "pressure" of the branches and enterprises on the planning agencies, their lagging behind new projects, is to a significant degree the result of shortcomings in the financial distribution of funds between the budget and the economy, the result of the financial "fattening" of the branches.

He suggests adding financial methods to the other methods of planning and strengthening the physical-financial balance in the national economy. Such a statement of the problem will contribute to improving the planning of capital investments.

The author of the monograph is a proponent of considerable expansion of the sphere of long-term credit and, on the whole, the role of bank activity in the national economy. The very fact that the enterprises and associations rarely turn to long-term credit is direct evidence of the internal funds they have at their disposal exceed the autonomous financing optimum. In essence, internal funds cannot and should not play the role of a source for the creation of that part of the fixed capital, expenditures for which are recouped over a long period of time. Under the conditions of the regular economic collectivization of the enterprises and developed autonomous financing, this is the prerogative of long-term credit. This point is of principal significance for the development of true autonomous financing, and it has been explained in detail in L. V. Braginskiy's book.

An analysis of the reasons for underutilization of credit in the sphere of capital construction quite logically leads the author to a clarification of the leading problem concerning the relationship between centralism and decentralization in management (pp 79-81). I support L. V. Braginskiy's position regarding the fact that strengthening the centralized foundations in the management of investment activity certainly does not mean belittling the principle of repayment and thus a narrowing of the possibilities of utilizing

autonomous financing instruments, including long-term credit. The majority of centralized capital investments are made for the purpose of developing and equipping production, and therefore they, like the capital investments of individual enterprises, cannot be broken away from the sphere where the expenditures and the results are closely interconnected, even if this connection is not clearly manifested for years.

But up to this point we have not yet found effective means of combining centralized decisions concerning capital construction and autonomous financing of enterprises and branches. It must be recognized that many works of economists are concentrated around the solutions to, as it were, "physical" aspects of this problem: improving the physical planning indicators and balancing construction production with the capacities of the contracting organizations. As for value measurements, they frequently do not play an independent role and account for "reality" conventionally, especially under the conditions of the application of imperfect prices.

And here there is practically no mechanism of direct influence on autonomous financing interests which leads them down the path of unified national economic requirements for effectiveness. And yet this task was set by the 25th CPSU Congress! But one cannot seriously consider a method of coordination of the interests of the norm for payment for funds or credit which is several times lower than the normative for the effectiveness of capital investments.

The monograph essentially brings up for consideration the question of combining centralism with the interests of the enterprise in the area of capital investments. Here one can single out two problems: the autonomous financing interaction between the bank and the enterprise and the effectiveness of credit investments.

Convincingly proving that the national economy has no other agency which would be so suitable for maintaining a unified direction of state policy for capital investments, the author describes the essentially new bank functions and concretizes them. Perhaps the most interesting in this respect are the ideas concerning autonomous financing of the bank and its immediate interests in expanding the sphere of application of credit resources.

The bank is the only high level management agency which is naturally included in the orbit of direct autonomous financing regulation (in this case I am steering clear of individual experiments in transferring branch ministries over to complete autonomous financing: there is much that is questionable in them). If these relations are still inadequately developed and there is a barrier to the "commercial" nature of credit, this circumstance can hardly be regarded as an achievement.

Just take the question of interest payments on deposits of the enterprises and associations. Now these deposit interests are not being paid and can hardly stimulate increased accumulations in the bank. But in fact the absence of these payments does not help to solve the most important problem of limiting the demand for capital investments. It seems that the dispersion of capital

investments and the endless inclusion in the construction plans of new facilities, without taking into account the unified requirements for effectiveness -- this is the "price" we pay for the so-called savings on deposit interests. And yet the latter -- and the author is undoubtedly right here -- could serve as the lower limit for the effectiveness of capital investments and an instrument for regulating the demand for new resources (p 153).

The author formulates the typical features of the effect of credit investments and its temporal aspect. After all, for the borrower-enterprise this effect means an advantage in time, and this is apparently correct, for all other useful results which are frequently ascribed to credit investments in fact reflect the properties of the object of investments of fixed capital itself.

Additionally, the book describes an original economico-mathematical model of the effectiveness of credit (p 168). It has an advantage over certain other models of this kind since it provides an answer to the question of how the economic incentive funds of the enterprises change when financing is from its own resources and when it is carried out with the help of long-term credit.

And, finally, the work suggests a concrete economic mechanism for bank influence on increasing the effectiveness of credit investments. Clarifying the main properties of bank credit -- being subject to return and payment -- the author gives them a new interpretation. This includes the substantiation of part of the profit as a source of payment for loans, taking into account the autonomous financing interests of the borrowers (pp 139-140) and the dependence of the interest policy on the "absorbing" capacity of the enterprises and the balancing in the plan for supply and demand for investment resources (p 161 ff).

Not limiting himself to general wishes, L. V. braginskiy also suggests concrete ways of solving the problems that have been raised. Thus he recommends a formula for determining the time periods for the use of long-term credit which is different from the formula used by Stroybank institutions; he points out the directions that make it possible to increase the role of interest on credit in the management mechanism.

The entire monograph under review is pervaded with the idea of the close coordination of reproduction of fixed capital and autonomous self-financing. The planning of credit and the mechanism for granting it are thus regarded as methods for accelerating the process of accumulation, methods of establishing proper boundaries between the internal and borrowed funds of the autonomously financed enterprise.

But what about the shortcomings of the monograph? Are there really none of them? -- the reader who is accustomed to the existing style of reviewing scientific literature might ask. I am far from thinking that L. V. Braginskiy's monograph is without shortcomings. It expresses certain questionable ideas and some of its points are not sufficiently explained (for example, about the unified financial and credit plan). But this is not a matter of shortcomings. The main thing, in my opinion, is something else.

The work, which is research by nature, interprets profoundly and analyzes in detail the system of long-term bank credit. This is why one has every right to call it a contribution to solving the central economic problem of our national economy -- the problem of increasing the effectiveness of public production.

I advise reading this book.

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PREDICTION OF MANAGEMENT ACTIVITY SATIRIZED

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[Article by Leonid Treyer: "A Horoscope for Managers"]

[Text] Cancer

Birth date: 22 June - 21 July

People born under this sign have a presentiment of unpleasantness two years before it occurs, although it occurs much sooner and not where they expect. A Cancer's mood most frequently depends on the mood of his boss at work and the mood of his wife after work. Cancers by nature are peace-loving, or, rather, timid, but when their back is up against the wall they begin to say what they think, and then they are sorry about this later. A Cancer is not as gentle as he would like to be to his subordinates and not as firm as he would like to be to his superiors. He himself does not always understand what he is like at work. He chooses the lesser of two evils, which frequently turns out to be the greater. As a rule, a Cancer is talented, although he frequently does not know precisely at what. He wavers a long time before making a decision, but once it is made, nothing can make him change it, even if it is wrong. He is interested in new ideas, but not in carrying them out. A Cancer usually keeps nothing from his wife except his 13th wage.

Prediction for 1984. Luck will be with you if you follow your conscience. In April they will send you somewhere, and for a long time. Your absence will produce a great economic effect, for which they will promote you. One of your friends will possibly let you down, and therefore it would be useful to get a dog. On Tuesdays it is best for you to hold your tongue.

Leo

22 July - 21 August

As a rule, Leo is strong. He is frequently tempted to show his strength, but is afraid of reproaches. Since Leo does not disturb his own friends, everyone around him feels that he is in danger. People born under this sign can perform any management work except that which is low paid. Excessive

confidence in himself sometimes provokes Leo to unsuccessful ventures with his subsequently being transformed into a scape goat. But even in this role he does not lose his natural optimism. So many doors are open to the lion that he cannot always find the necessary one. He prefers to love all mankind, and not each person individually. Leo is so open in conversation that the people around him do not immediately understand what it is he is trying to say. He is sometimes crude, but this is taken as a sign of his directness and honesty. It is difficult for him to take suggestions from others, but once he has accepted them he considers them his own. It is difficult to work with Leo, but people rarely leave him.

Prediction for 1984. Stay away from renovation, reorganization and other large tasks. Do not change your wife, your apartment or your job. You must be patient! There is only one week in which you may take a risk: from 18 through 25 October. If you can squeeze everything into this time period, go ahead and try.

Virgo

22 August - 21 September

People born under this sign have been given a clear mind. With the use of logic they are capable of stumping anybody they want to, including themselves. They make brilliant scientific workers, theater critics, lawyers and experts. Virgos have restraint, although from time to time they allow themselves outbursts of sociability which extend into short-term friendships or long-term animosity. Everything they do they always do well, except on the 30th and 31st of each month. They love to lie, which frequently angers those around them. Virgos' critical mind sometimes scares the management away from them, thus impeding their career. They can understand a person at first glance, offend him at the second glance, and placate him at the third glance. Virgos practically never take bribes, however there has never been a case in which they were offered one.

Prediction for 1984. You do not have to be bored. Your income will increase in direct proportion to your worries. Your needs will become greater, and your desires -- fewer. In the autumn they will send you to courses for improving qualifications, when you will manage to keep them as they are. There will be pleasant concerns with a candidate of sciences. Jogging would be useful.

Libra

22 October - 21 November

Libras are distinguished by the pleasant expression on their faces, which does not leave them even when they are sleeping. They value their peace so much that they can be undecided for years, calling it far-sightedness. Their desire to live in harmony with everyone causes them to express the opposite opinion and therefore their point of view always depends on the person with whom they are speaking. Libras do not like conflicts, and in order to avoid them they are sometimes willing to release fairly good specialists at their own request. Their rich imagination enables Libras to take what is desired to

be real and therefore their reports and summaries frequently gratify their superiors. The life path of Libras is filled with good intentions, regardless of what you may say about their actions. Their good memory enables them to remember absolutely everything, but it does not keep them from denying their own words. Libras are never in a hurry and they maintain their ability to work far into old age.

Prediction for 1984. You will get through this year without losses. There will be a small decline in the second quarter, but you will manage to adjust the plan. In December a commission will descend upon you, but you will be warned ahead of time. Beware of the blond with the attractive hand writing. If you play "Sports Lotto" in August bet on: 1, 7, 17, 23 and 27.

Scorpio

22 October - 21 November

People born under this sign are filled with contradictions. Beneath his hard exterior the Scorpio has a soft heart and a secret desire to help. He is greedy for knowledge although he stops learning at age 24 and begins to teach others. Sometimes his childish trustfulness lets him down, but he is saved by his painful suspiciousness. A Scorpio relies on the achievements of science and at the same time believes in dreams. He does not strive to be a leader, preferring to exert influence during the course of events from the sidelines, which enables him to avoid getting his hands dirty. He is stubborn in overcoming obstacles and finds them even in places where they do not exist. During childhood he acquires friends and enemies who last him throughout his life, but sometimes, for the sake of business, he is prepared to switch their positions. In spite of his secretive nature, people around him are willing to share their ideas with him, something they are frequently sorry for. There are not enough stars in the sky for the Scorpio, but he does not send up any of his own.

Prediction for 1984. Fortune will be favorably inclined toward you in the spring and indifferent in the autumn. If you are required to introduce a new method, do not resist. Try not to borrow money from others since you will have to return your own. In July limit your consumption of alcoholic beverages. Your television set will break in November and you will be able to become involved in rearing your child.

Sagittarius

22 November - 21 December

A Sagittarius always knows what he wants and is sometimes sad because he wants too much. He has the gift of making his subordinates follow him and therefore his mistakes cost a great deal. The Sagittarius is inclined to take risks, as a result of which he changes jobs frequently. He is so directed toward the future that he is capable of skipping over the present. It is difficult to draw the Sagittarius out, but if one manages to do this he offends many. People born under this sign never harbor a grudge, preferring to bring it out in the open. Subordinates love the Sagittarius for his directness and respond to him in kind, for which they frequently suffer. A Sagittarius loves to

joke, but his jokes frequently puzzle those around him. He is capable of great deeds, if he would not try to perform them all at once.

Prediction for 1984. A job change is expected, but it is not clear: a promotion or a demotion. In March someone will complain about your activity and in August -- about your passivity. One woman will practically destroy you, but another will come to your rescue. You will have to be extremely cautious in December. Pay attention to your eating habits. It will be good for you to eat champignons from the Baleares Islands and feijoa fruits.

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